TETRA TECH

Wes Williams
Project Manager

January 20, 2017

Mr. James Augustyn
Federal On-Scene Coordinator
U.S. Environmental Protection Agency Region 5
25063 Center Ridge Road
Westlake, Ohio 44145

Subject: **Final Removal Action Report**
Harper Industries Asbestos Site
Cleveland, Cuyahoga County, Ohio
EPA Contract No. EP-S5-13-01
EPA TDD No. S05-0001-1609-004
Document Tracking No.: 1322

Dear Mr. Augustyn:

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting this final removal action report for the Harper Industries Asbestos Site in Cleveland, Cuyahoga County, Ohio. This report summarizes the field activities related to the asbestos removal conducted in September and October 2016, and addresses your comments on the draft report that Tetra Tech submitted on December 23, 2016.

If you have any questions regarding this report, please call me at (216) 470-8109

Respectfully,

Wes Williams
Tetra Tech START IV, Region 5 Project Manager

Enclosure

cc: Kevin Scott, Region 5 START Program Manager
TDD File

6777 Engle Road, Suite L, Middleburg Heights, OH. 44130
Tel. 440.297.2178
www.tetratech.com

FINAL REMOVAL ACTION REPORT
HARPER INDUSTRIES ASBESTOS SITE
CLEVELAND, CUYAHOGA COUNTY, OHIO

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Emergency Response Branch
Region 5
25063 Center Ridge Road
Westlake, Ohio 44145

Submitted by

Tetra Tech, Inc.
6777 Engle Road – Suite L
Middleburg Heights, Ohio 44130

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Prepared by

Wes Williams
Tetra Tech START IV Geologist

Approved by

John Dirgo
Tetra Tech START IV QC Reviewer

CONTENTS

1.0 INTRODUCTION

Under Superfund Technical Assessment and Response Team (START) Contract EP-S5-13-01, Technical Direction Document (TDD) No. S05-0001-1609-004, the U.S. Environmental Protection Agency (EPA) tasked Tetra Tech, Inc. (Tetra Tech) START to assist EPA with a removal action at the Harper Industries Asbestos site located in Cleveland, Cuyahoga County, Ohio. This report summarizes the activities completed as part of the removal action. Specifically, the report includes the following sections:

- Site Background
- Debris Removal, Transportation, and Disposal of Municipal Waste and Asbestos-Containing Waste Material (ACWM). Asbestos-related activities included:
    - Particulate monitoring during ACWM removal
    - Perimeter air sampling during ACWM removal
    - Decontamination and recycling of scrap metal
    - Final inspection
- Identification, Removal, and Disposal of Waste Containers
- Conclusions

In addition, this removal action report contains six appendices. Appendix A provides figures including a site location map, site layout map, and perimeter air sampling location map with analytical results. Appendix B provides tables summarizing the transportation and disposal of municipal waste and ACWM, and air monitoring, air sampling, and laboratory data collected during the removal action. Appendix C provides the field notes recorded by START during site activities. Appendix D provides the photographic documentation log of site conditions during the removal action. Appendix E provides the data validation report, the laboratory analytical reports for samples collected, and the chain-of-custody forms. Appendix F provides information on environmentally preferred practices performed as part of this removal action and other work related to this TDD.

2.0 SITE BACKGROUND

The Harper Industries Asbestos site is a former industrial property located northwest of the intersection of Woodland Avenue and Woodhill Road in Cleveland, Cuyahoga County, Ohio 44109 (see Figures 1 and 2 in Appendix A). The geographical coordinates for the site are 41^0 29' 20.46" north latitude and -81^0 36' 59.61" west longitude. The site is bordered to the north/northeast by a construction site and an RTA Service Facility, to the south by Woodland Avenue with residential area beyond, and to the west/northwest by railroad tracks with an industrial area beyond. The site is identified with Cuyahoga County Parcel Number 126-12-002.

The Harper Industries Asbestos site is located on approximately 3 acres of land and contains one three-story building. Four other buildings were present on the site, but were demolished circa 2010. Debris from these demolitions was present at the site prior to the removal action. The site was originally utilized as an industrial and commercial building complex, identified as the Victoreen Building Complex, since the mid-1940s. In 2009, prompted by an asbestos survey conducted by JP Consulting of Fairlawn, Ohio, the Victoreen Building Complex submitted a notification of demolition to the Cleveland Division of Air Quality (CDAQ) indicating building demolition was planned and regulated asbestos-containing materials would be removed by a licensed asbestos abatement contractor. During January 2010, representatives from the CDAQ conducted a site visit of the asbestos abatement and building demolition activities at the Victoreen Building Complex. CDAQ found that Harper Industries, the demolition contractor, was not conducting demolition of structures in compliance with 40 CFR Part 61.145 for buildings containing Regulated Asbestos Containing Materials (RACM), as specified in the notice of intent to demolish. The inspection also indicated some RACM had been removed without using proper emission controls. Mr. James Hyland, former president of Harper Industries, previously documented that proper procedures would be followed when the RACM was to be removed. Several notice-of-violations were issued to Mr. Hyland between January 2010 and April 2011. Despite several requests, Harper Industries did not implement any response actions. As a result, on April 26, 2011, the case was referred to the Ohio Environmental Protection Agency's Division of Pollution Control for further enforcement action. Mr. Hyland filed for dissolution of the company in February 2013. In 2014, the State of Ohio took ownership of the site as a result of foreclosure.

On September 20, 2016, EPA and Tetra Tech START performed a site walk to confirm the presence of asbestos-containing material (ACM) in debris piles and RACM inside the former Victoreen Building Complex. The site walk consisted of a site reconnaissance, visual identification of ACM and

RACM, estimation of the volume of waste material in the debris piles, and photographic and written documentation of site features.

3.0 DEBRIS REMOVAL, TRANSPORTATION, AND DISPOSAL OF MUNICIPAL WASTE AND ASBESTOS CONTAINING WASTE MATERIAL

From September 26 through October 19, 2016, EPA conducted removal activities involving consolidating, loading, and disposing of municipal waste and ACWM from the site. During the removal action, Tetra Tech START monitored work activities for dust emissions and surface water runoff from wetting and dust suppression. Removal activities were performed by EPA Emergency and Rapid Response Services (ERRS) contractor Environmental Restoration (ER).

Tetra Tech START conducted a pre-removal site walk and radiation survey utilizing a Ludlum Model 192 survey meter to ensure worker safety. A measurement of five to twenty micro-roentgens per hour (µR/hr) was established as an on-site background radiation level. No measurements taken from the debris piles or inside the former Victoreen Building Complex exceeded the established background level.

Tetra Tech START monitored weather conditions, conducted real-time air monitoring for particulate matter 10 micrometers or less in diameter (PM_{10}), and collected perimeter air samples for laboratory analysis via phase contrast microscopy (PCM). The PCM results were used to evaluate whether airborne fiber concentrations were migrating from the site during removal activities.

ERRS used two excavators, a front-loader, and a skid steer to break down the asbestos-contaminated debris into manageable pieces, consolidate the debris pile, and load the ACWM into lined dump trucks for disposal. ERRS personnel used two fire hoses to provide dust suppression and wetting during consolidation and loading. Scrap metal recovered from the former building was segregated from the ACWM piles for decontamination and recycling.

During removal activities, a free-standing wall located at the southeastern corner of the site bordering Woodland Avenue to the north was found to be unstable, posing a public risk. ERRS pulled the wall down and into the site footprint while wetting the debris to deter any fugitive dust. The debris was consolidated into the ACWM pile for removal. A permanent chain-link fence was installed in place of the wall to retain security at the site.

Inside the former Victoreen Building Complex, all ACWM found on the ground was consolidated, wetted, and double-bagged. A total of 46 bags of loose ACWM, mostly in the form of pipe wrap, were collected and added to the debris pile for disposal.

ERRS loaded ACWM directly into dump trucks. Before ACWM was loaded, ERRS inspected the truck beds and installed a polyethylene liner measuring 0.006 of an inch in thickness (6-mil). Once installed,

ERRS inspected the liner to verify that no tears were present. The trucks pulled into the loading area and were loaded with ACWM using the excavator. ERRS provided dust suppression during loading operations using a hose and nozzle connected to a water hydrant. After the truck was loaded, ERRS workers sealed the top of the 6-mil burrito-style liner with spray adhesive in the truck sealing station (locations of truck loading and lining are indicated on Figure 2 in Appendix A). Asbestos warning labels were attached to the outside of the liner. Tetra Tech START inspected the liner before the truck departed to ensure it was properly sealed and undamaged during loading. Any small rips or tears were sealed with duct tape before the truck left the site.

Asbestos signs and Class 9 Other Regulated Material (ORM) 2212 placards were fastened to the exterior cargo area of each truck prior to departure from the site.

Municipal waste and ACWM was transported for disposal to a State of Ohio asbestos-approved landfill, the Waste Management Inc., American Landfill, located at 7916 Chapel Street SE, Waynesburg, Ohio. A total of 21 truckloads of municipal waste weighing 280.86 tons were transported off site for disposal (see Table 1 in Appendix B). A total of 101 truckloads of ACWM weighing 2,231.70 tons were transported off site for disposal (see Table 2 in Appendix B**)**.

The following sections describe particulate monitoring, perimeter air sampling, decontamination and recycling of scrap metal, and final inspection performed by Tetra Tech START as part of the removal action at the site.

3.1 PARTICULATE MONITORING DURING THE ASBESTOS REMOVAL ACTIVITY

Tetra Tech START conducted air monitoring for PM_{10} at locations around the perimeter of the site exclusion zone to confirm the adequacy of control measures used to prevent generation of fugitive dust emissions during ACWM removal work (Tetra Tech 2016). A Thermo Scientific MIE personal DataRam (pDR) pDR-1500 personal dust meter was used to collect particulate readings around the exclusion zone during removal activities. The location of the pDR varied based on the daily prevailing winds, and the pDR was mounted in the breathing zone, downwind of the ERRS activities.

The pDR monitored PM_{10} concentrations, logged data, and provided time weighted average (TWA) particulate concentrations during active loading operations. A PM_{10} action level (AL) of 2,500 micrograms per cubic meter ($\mu g/m^3$) was established. An alarm on the unit was programmed to alert EPA and Tetra Tech START of exceedances of the 2,500 $\mu g/m^3$ AL.

Along with the perimeter particulate monitoring, Tetra Tech START documented ERRS removal work, including dust suppression measures, to ensure ERRS complied with the no visible emissions standard provided by the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Asbestos, 40 CFR Part 61.150 (a).

Tetra Tech START personnel conducted air monitoring for PM_{10} during ACWM removal activities from September 28 through October 19, 2016. Air monitoring was conducted on 14 dates during this period without an exceedance of the AL. The highest TWA concentration for PM_{10} was 143.0 $\mu g/m^3$ on October 12, 2016, due to the disturbance of particulates by truck traffic traveling to the truck loading zone. Table 3 in Appendix B summarizes the daily PM_{10} airborne concentrations.

3.2 PERIMETER AIR SAMPLING DURING THE ASBESTOS REMOVAL ACTIVITY

Tetra Tech START conducted perimeter air sampling during the ACWM removal activities using Gillian AirCon2 high-volume air samplers (Tetra Tech 2016). Air sampling was conducted at designated locations to identify airborne fiber concentrations for receptors on and off site. Perimeter air samples were collected at the following locations (shown on Figure 3 in Appendix A):

- L01 — Located at the southern border of the site, on the western side of the debris cleanup, along the northern edge of Woodland Avenue.
- L02 — Located at the southern border of the site, on the eastern side of the debris cleanup, along the northern edge of Woodland Avenue.

Perimeter air sampling was conducted during removal activities from September 28 to October 19, 2016. EPA established the site-specific AL of 0.01 fiber per cubic centimeter (f/cc) for industrial areas in accordance with the Office of Solid Waste and Emergency Response (OSWER) Directive #9200.0-68, Framework for Investigating Asbestos-Contaminated Superfund Sites (OSWER 2008). Tetra Tech START collected a total of 34 air samples during ACWM removal activities. The air samples were submitted under chain of custody, to EA Group in Mentor, Ohio for PCM analysis in accordance with National Institute for Occupational Safety and Health (NIOSH) Method 7400 (NIOSH 1994).

Of the 34 samples collected, 24 were perimeter air samples and 10 were field blanks. Fiber counts for all samples analyzed by PCM were below the 0.01 f/cc AL, ranging from <0.000650 f/cc to 0.00490 f/cc.

Figure 3 in Appendix A, shows the asbestos perimeter air sampling locations with associated analytical results, and Table 4 in Appendix B summarizes the PCM air sampling results. The data validation report for these air samples is located in Appendix E. The data validation report also includes 13 air samples

collected by ER for background air quality and worker safety. These samples are not discussed in the removal action report.

3.3 DECONTAMINATION AND RECYCLING OF SCRAP METAL

As part of the removal action, scrap metal was segregated from the ACWM for decontamination and recycling. Decontamination was completed using the water hose to rinse the scrap metal while still in place over the debris pile. Scrap metal was transported for recycling at American Metal Processing Company located at 17001 Saranac Road in Cleveland, Ohio. A total of 8.63 tons of scrap metal was transported off site for recycling.

3.4 FINAL INSPECTION

EPA and Tetra Tech START conducted a final site walk on October 19, 2016. Open, accessible windows along Woodland Avenue in the former Victoreen Building Complex were covered and secured with plywood board. The perimeter fence was repaired and affixed with warning signs to deter unauthorized entry. The removal action was completed and site personnel demobilized on October 20, 2016.

4.0 IDENTIFICATION, REMOVAL, AND DISPOSAL OF WASTE CONTAINERS

During the removal, four waste containers and one air cylinder were discovered on site. ERRS used the excavator, skid steer, and a fixed hook and noose to extract the containers from the debris piles and place them on the ground for examination. ERRS extracted the following containers listed in the table below from the debris piles around the former Victoreen Building Complex.

Orphan Waste Containers

Quantity	Volume/Type	Labeled/Contents	Condition	Disposition
2	55-gallon/steel	No label/tar-like substance	Poor-open top	Transported under manifest to Chemtron LLC
1	55-gallon/steel	Fuel-oil additive	Fair-unopened	Transported under manifest to Chemtron LLC
1	55-gallon/plastic	No label	Fair-unopened	Transported under manifest to Chemtron LLC
1	20-pound/steel	No label/air cylinder	Fair-unopened	Transported to Linde Air Company

On Friday, October 14, ERRS sampled the fuel oil additive drum, as well as the 55-gallon plastic drum. Chemtron Corporation LLC (Chemtron) arrived on site to transport the samples under chain of custody to their Avon Lake, Ohio facility for characterization. On Tuesday, October 18, the air cylinder was transported for evacuation and disposal at the Linde Air Company located at 9075 Bank Street in Valley View, Ohio. On Tuesday, November 22, ERRS oversaw the remaining four waste containers as they were transported under manifest to the Chemtron facility for disposal.

5.0 CONCLUSIONS

The scope of work for this removal action was to (1) consolidate and remove demolished building materials that were determined to be a threat to human health and the environment, and (2) remove, transport, and dispose of all ACM and ACWM at an EPA-approved disposal facility in accordance with the EPA Off-site Rule (40 CFR.§ 300.440). Removal of ACM and ACWM was successful in mitigating threats to public health, welfare, and the environment; however, ACM and ACWM still remain on site inside the former Victoreen Building Complex in the form of pipe wrap on existing piping still in place. The removal of intact ACM and ACWM within the former Victoreen Building Complex was not included in the scope of work for this removal action. Removal of ACM and ACWM was completed in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9604(a)(1), to abate or eliminate the immediate threats posed to public health and the environment. Total quantities of waste removed from site included:

- 21 truckloads containing 280.86 tons of municipal waste were transported to the landfill for disposal;
- 101 truckloads containing 2,231.70 tons of ACWM were transported to the landfill for disposal; and
- 8.63 tons of scrap steel were transported off site for recycling.

REFERENCES

Bing Maps Hybrid. 2013. Map of 10101 Woodland Avenue, Cleveland, OH.

National Institute for Occupational Safety and Health (NIOSH). 1994. "Asbestos and Other Figures by PCM" Method 7400. Issue 2. August 15.

Office of Solid Waste and Emergency Response (OSWER). 2008. Framework for Investigating Asbestos-Contaminated Superfund Sites. Directive #9200.0-68. September.

Tetra Tech. 2016. "Draft Air Monitoring Plan – Harper Industries Asbestos Site." September 27.

U.S. Geological Survey. 1994. 7-5 Minute Topographic Map of Cleveland North, Ohio, Quadrangle.

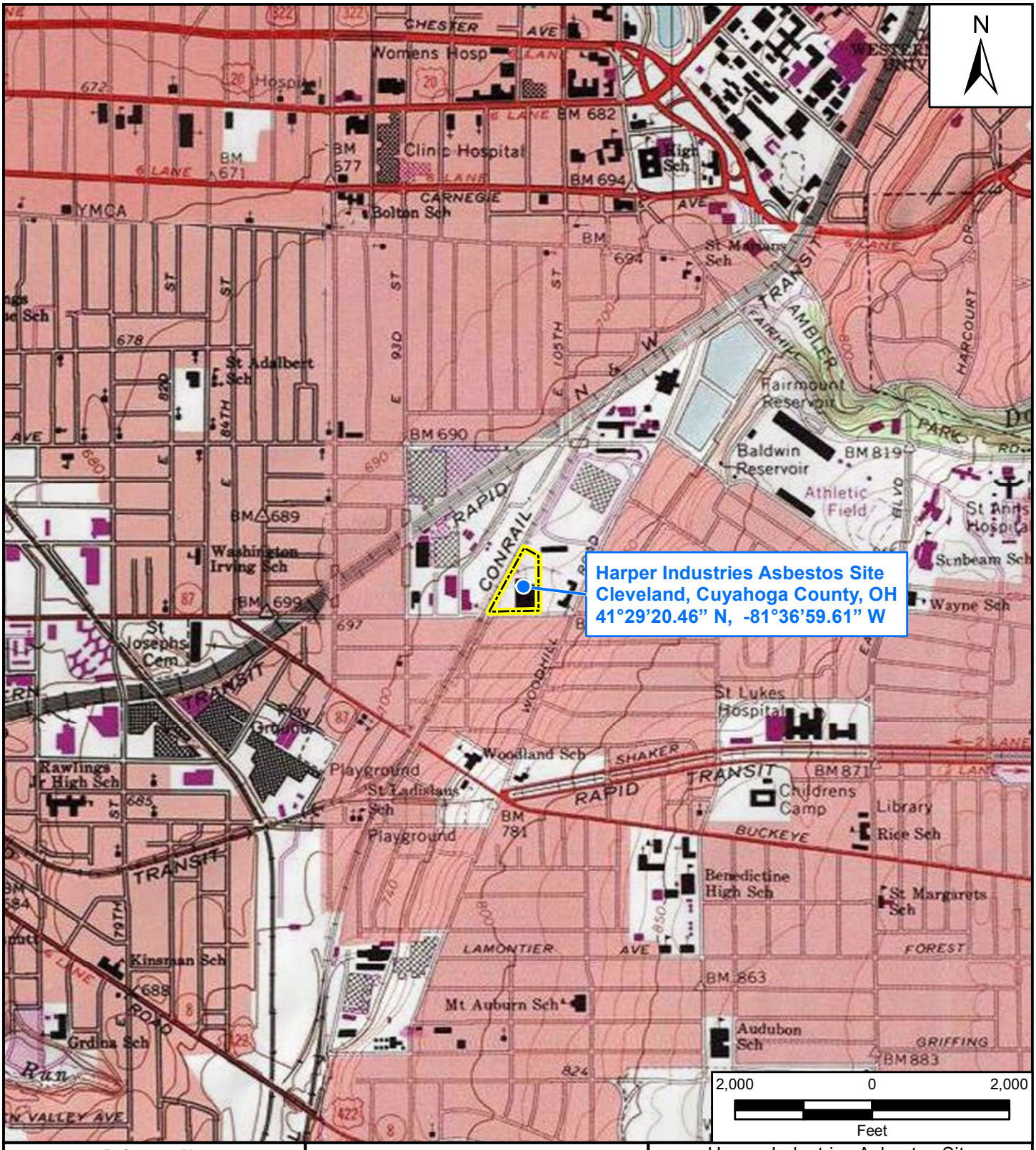
APPENDIX A

FIGURES

Figure 1: Site Location Map

Figure 2: Site Layout Map

Figure 3: Perimeter Air Sampling Locations and Results



Reference Map

Legend

Approximate Site Boundary

Source: USGS 7.5-Minute Topographic Quadrangle Map
Cleveland North, OH 1994

Harper Industries Asbestos Site
10101 Woodland Avenue
Cleveland, Cuyahoga County, Ohio

Figure 1
Site Location Map

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Prepared For: EPA | Prepared By: Tetra Tech, Inc.

File Path: G:\G\G9026-START IV\Ohio\Harper Industries Asbestos Site\mxd\2016-12\Fig1-SiteLocation.mxd

Date Saved: 12/8/2016 EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1609-004

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter

Reference Map

Legend

Approximate Site Boundary

Source: Bing Maps Hybrid 2013

Harper Industries Asbestos Site
10101 Woodland Avenue
Cleveland, Cuyahoga County, Ohio

Figure 2
Site Layout Map

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Prepared For: EPA

Prepared By: Tetra Tech, Inc.

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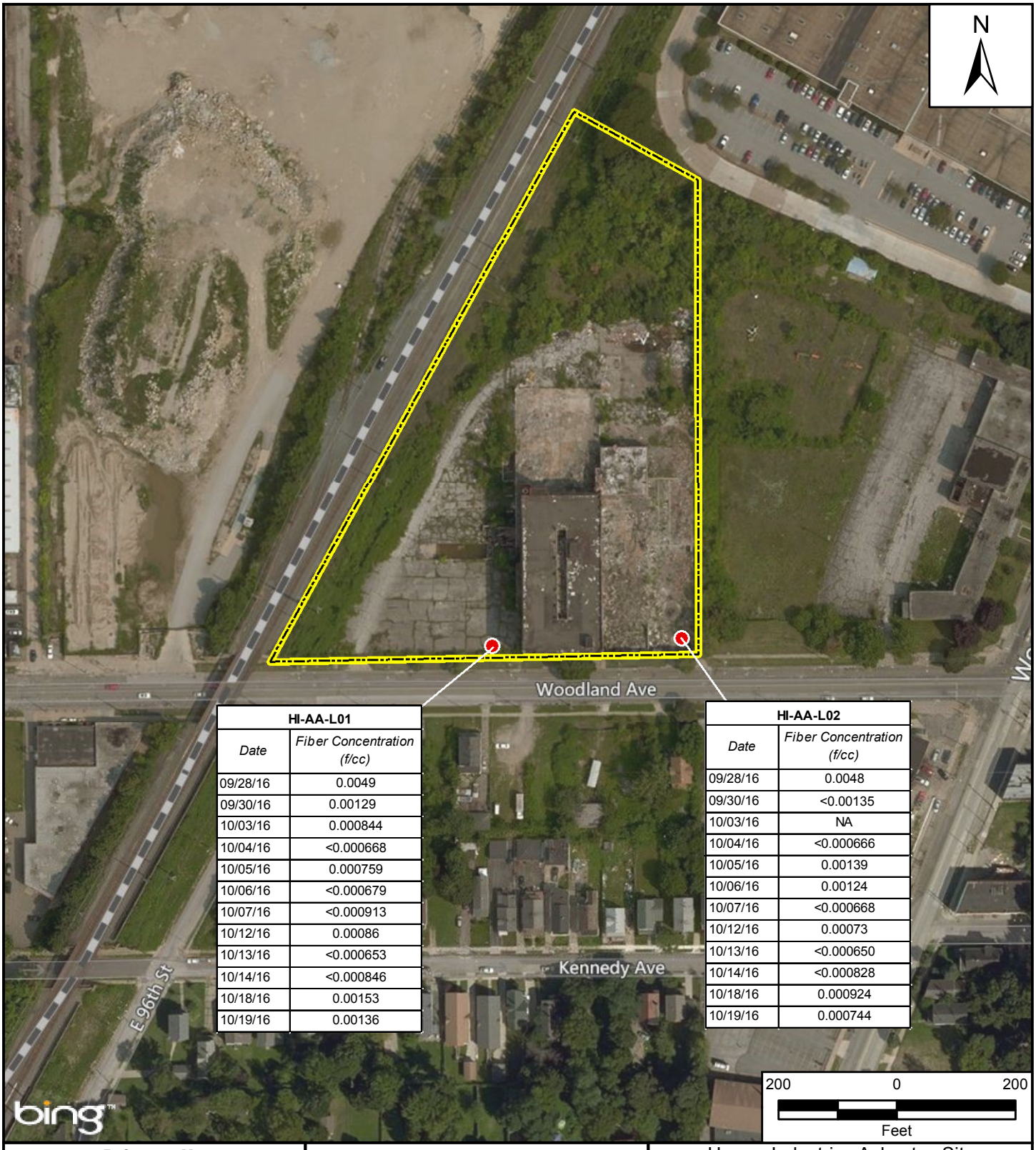
Date Saved: 12/8/2016

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1609-004

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter



HI-AA-L01	
Date	*Fiber Concentration (f/cc)*
09/28/16	0.0049
09/30/16	0.00129
10/03/16	0.000844
10/04/16	<0.000668
10/05/16	0.000759
10/06/16	<0.000679
10/07/16	<0.000913
10/12/16	0.00086
10/13/16	<0.000653
10/14/16	<0.000846
10/18/16	0.00153
10/19/16	0.00136

HI-AA-L02	
Date	*Fiber Concentration (f/cc)*
09/28/16	0.0048
09/30/16	<0.00135
10/03/16	NA
10/04/16	<0.000666
10/05/16	0.00139
10/06/16	0.00124
10/07/16	<0.000668
10/12/16	0.00073
10/13/16	<0.000650
10/14/16	<0.000828
10/18/16	0.000924
10/19/16	0.000744

Reference Map

Legend

Approximate Site Boundary

f/cc = Fibers per cubic centimeter
NA = Not applicable
HI = Harper Industries
AA = Area Air
L = Location

Source: Bing Maps Hybrid 2013

Harper Industries Asbestos Site
10101 Woodland Avenue
Cleveland, Cuyahoga County, Ohio

Figure 3
Perimeter Air Sampling Locations and Results

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Prepared For: EPA | Prepared By: Tetra Tech, Inc.

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Date Saved: 12/27/2016 EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1609-004

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter

APPENDIX B

DATA SUMMARY TABLES

TABLE 1: Transportation and Disposal Log-Municipal Waste

Load #	Date Shipped	Truck Number	Subcontractor	Disposal Facility	Manifest Doc #	Actual Weight (tons)
1	09/29/16	600	Waste Management	American Landfill	SW-001	17.92
2	09/29/16	604	Waste Management	American Landfill	SW-002	15.45
3	09/29/16	602	Waste Management	American Landfill	SW-003	14.08
4	09/29/16	600	Waste Management	American Landfill	SW-004	15.95
5	09/29/16	610	Waste Management	American Landfill	SW-005	12.87
6	09/29/16	604	Waste Management	American Landfill	SW-006	12.54
7	09/29/16	602	Waste Management	American Landfill	SW-007	10.92
8	09/29/16	604	Waste Management	American Landfill	SW-008	12.54
9	09/29/16	610	Waste Management	American Landfill	SW-009	12.49
10	09/30/16	4	Waste Management	American Landfill	SW-010	8.76
11	09/30/16	3	Waste Management	American Landfill	SW-011	10.96
12	09/30/16	600	Waste Management	American Landfill	SW-012	11.19
13	09/30/16	606	Waste Management	American Landfill	SW-013	14.56
14	09/30/16	608	Waste Management	American Landfill	SW-014	13.42
15	09/30/16	604	Waste Management	American Landfill	SW-015	13.90
16	09/30/16	610	Waste Management	American Landfill	SW-016	16.89
17	09/30/16	4	Waste Management	American Landfill	SW-017	13.27
18	09/30/16	3	Waste Management	American Landfill	SW-018	14.44
19	09/30/16	600	Waste Management	American Landfill	SW-019	12.89
20	09/30/16	606	Waste Management	American Landfill	SW-020	11.93
21	09/30/16	604	Waste Management	American Landfill	SW-021	13.89
21	**TOTALS**					**280.86**

Notes:

= Number

Doc = Document

SW = Solid Waste

TABLE 2: Transportation and Disposal Log-ACWM

Load #	Date Shipped	Subcontractor	Disposal Facility	Manifest Doc #	Manifest #	Actual Weight (tons)
1	10/07/16	Waste Management	American Landfill	ACM-001	1	20.08
2	10/07/16	Waste Management	American Landfill	ACM-002	2	19.11
3	10/07/16	Waste Management	American Landfill	ACM-003	547455	16.61
4	10/07/16	Waste Management	American Landfill	ACM-004	547456	20.78
5	10/07/16	Waste Management	American Landfill	ACM-005	547457	20.58
6	10/07/16	Waste Management	American Landfill	ACM-006	547458	22.37
7	10/07/16	Waste Management	American Landfill	ACM-007	547459	21.35
8	10/07/16	Waste Management	American Landfill	ACM-008	547460	26.85
9	10/07/16	Waste Management	American Landfill	ACM-009	547461	28.92
10	10/07/16	Waste Management	American Landfill	ACM-010	547462	26
11	10/07/16	Waste Management	American Landfill	ACM-011	547463	24.47
12	10/07/16	Waste Management	American Landfill	ACM-012	547464	24.81
13	10/07/16	Waste Management	American Landfill	ACM-013	547465	30.1
14	10/07/16	Waste Management	American Landfill	ACM-014	547466	28.5
15	10/07/16	Waste Management	American Landfill	ACM-015	547467	33.82
16	10/12/16	Waste Management	American Landfill	ACM-016	547468	25.37
17	10/12/16	Waste Management	American Landfill	ACM-017	547469	25.2
18	10/12/16	Waste Management	American Landfill	ACM-018	547470	23.77
19	10/12/16	Waste Management	American Landfill	ACM-019	547471	21.86
20	10/12/16	Waste Management	American Landfill	ACM-020	547472	21.76
21	10/12/16	Waste Management	American Landfill	ACM-021	547473	22.69
22	10/12/16	Waste Management	American Landfill	ACM-022	547474	21.55
23	10/12/16	Waste Management	American Landfill	ACM-023	547475	25.21
24	10/12/16	Waste Management	American Landfill	ACM-024	547476	22.35
25	10/12/16	Waste Management	American Landfill	ACM-025	547477	22.91
26	10/12/16	Waste Management	American Landfill	ACM-026	547478	23.01
27	10/12/16	Waste Management	American Landfill	ACM-027	547479	22.38
28	10/12/16	Waste Management	American Landfill	ACM-028	547480	26.74
29	10/12/16	Waste Management	American Landfill	ACM-029	547481	22.92
30	10/12/16	Waste Management	American Landfill	ACM-030	547628	21.13
31	10/12/16	Waste Management	American Landfill	ACM-031	547629	20.48
32	10/12/16	Waste Management	American Landfill	ACM-032	547630	24.97
33	10/12/16	Waste Management	American Landfill	ACM-033	547631	22.6
34	10/12/16	Waste Management	American Landfill	ACM-034	547632	20.61
35	10/12/16	Waste Management	American Landfill	ACM-035	547633	20.9
36	10/12/16	Waste Management	American Landfill	ACM-036	547634	19.18
37	10/12/16	Waste Management	American Landfill	ACM-037	547635	21.03
38	10/12/16	Waste Management	American Landfill	ACM-038	547636	26.3
39	10/12/16	Waste Management	American Landfill	ACM-039	547637	21.86
40	10/13/16	Waste Management	American Landfill	ACM-040	547638	17.99
41	10/13/16	Waste Management	American Landfill	ACM-041	547639	19.04
42	10/13/16	Waste Management	American Landfill	ACM-042	547640	20.68
43	10/13/16	Waste Management	American Landfill	ACM-043	547641	21.51
44	10/13/16	Waste Management	American Landfill	ACM-044	547642	20.22
45	10/13/16	Waste Management	American Landfill	ACM-045	547643	24.03
46	10/13/16	Waste Management	American Landfill	ACM-046	547644	25.87
47	10/13/16	Waste Management	American Landfill	ACM-047	547645	21.4

TABLE 2: Transportation and Disposal Log-ACWM

Load #	Date Shipped	Subcontractor	Disposal Facility	Manifest Doc #	Manifest #	Actual Weight (tons)
48	10/13/16	Waste Management	American Landfill	ACM-048	547646	22.5
49	10/13/16	Waste Management	American Landfill	ACM-049	547647	20.58
50	10/13/16	Waste Management	American Landfill	ACM-050	547648	22.31
51	10/13/16	Waste Management	American Landfill	ACM-051	547649	24.76
52	10/13/16	Waste Management	American Landfill	ACM-052	547650	21.71
53	10/13/16	Waste Management	American Landfill	ACM-053	547651	20.37
54	10/13/16	Waste Management	American Landfill	ACM-054	547652	22.69
55	10/13/16	Waste Management	American Landfill	ACM-055	547653	22.32
56	10/13/16	Waste Management	American Landfill	ACM-056	547654	24.57
57	10/13/16	Waste Management	American Landfill	ACM-057	547655	22.5
58	10/13/16	Waste Management	American Landfill	ACM-058	547656	22.68
59	10/13/16	Waste Management	American Landfill	ACM-059	547657	23.05
60	10/13/16	Waste Management	American Landfill	ACM-060	547658	22.76
61	10/13/16	Waste Management	American Landfill	ACM-061	547659	22.81
62	10/13/16	Waste Management	American Landfill	ACM-062	547660	21.41
63	10/14/16	Waste Management	American Landfill	ACM-063	547661	20.47
64	10/14/16	Waste Management	American Landfill	ACM-064	547662	25.71
65	10/14/16	Waste Management	American Landfill	ACM-065	547663	19.41
66	10/14/16	Waste Management	American Landfill	ACM-066	547664	20.56
67	10/14/16	Waste Management	American Landfill	ACM-067	547665	22.36
68	10/14/16	Waste Management	American Landfill	ACM-068	547666	21.71
69	10/14/16	Waste Management	American Landfill	ACM-069	547667	20.46
70	10/14/16	Waste Management	American Landfill	ACM-070	547668	26.82
71	10/14/16	Waste Management	American Landfill	ACM-071	547669	22.78
72	10/14/16	Waste Management	American Landfill	ACM-072	547670	22.33
73	10/14/16	Waste Management	American Landfill	ACM-073	547671	23.16
74	10/18/16	Waste Management	American Landfill	ACM-074	547672	24.34
75	10/18/16	Waste Management	American Landfill	ACM-075	547677	20.24
76	10/18/16	Waste Management	American Landfill	ACM-076	547678	20.80
77	10/18/16	Waste Management	American Landfill	ACM-077	547679	21.31
78	10/18/16	Waste Management	American Landfill	ACM-078	547680	20.84
79	10/18/16	Waste Management	American Landfill	ACM-079	547681	20.15
80	10/18/16	Waste Management	American Landfill	ACM-080	547682	19.19
81	10/18/16	Waste Management	American Landfill	ACM-081	547683	19.76
82	10/18/16	Waste Management	American Landfill	ACM-082	547684	18.79
83	10/18/16	Waste Management	American Landfill	ACM-083	547685	19.01
84	10/18/16	Waste Management	American Landfill	ACM-084	547686	19.73
85	10/18/16	Waste Management	American Landfill	ACM-085	547687	20.85
86	10/18/16	Waste Management	American Landfill	ACM-086	547688	19.06
87	10/19/16	Waste Management	American Landfill	ACM-087	547689	20.06
88	10/19/16	Waste Management	American Landfill	ACM-088	547690	22.11
89	10/19/16	Waste Management	American Landfill	ACM-089	547691	17.88
90	10/19/16	Waste Management	American Landfill	ACM-090	547692	18.27
91	10/19/16	Waste Management	American Landfill	ACM-091	547693	22.59
92	10/19/16	Waste Management	American Landfill	ACM-092	547694	21.44
93	10/19/16	Waste Management	American Landfill	ACM-093	547695	21.22
94	10/19/16	Waste Management	American Landfill	ACM-094	547696	20.78

TABLE 2: Transportation and Disposal Log-ACWM

Load #	Date Shipped	Subcontractor	Disposal Facility	Manifest Doc #	Manifest #	Actual Weight (tons)
95	10/19/16	Waste Management	American Landfill	ACM-095	547697	22.03
96	10/19/16	Waste Management	American Landfill	ACM-096	547698	20.58
97	10/19/16	Waste Management	American Landfill	ACM-097	547699	22.64
98	10/19/16	Waste Management	American Landfill	ACM-098	547700	19.12
99	10/19/16	Waste Management	American Landfill	ACM-099	547701	21.94
100	10/19/16	Waste Management	American Landfill	ACM-100	547702	16.63
101	10/19/16	Waste Management	American Landfill	ACM-101	547703	15.68
101	**TOTALS**					**2231.70**

Notes:

# = Number
ACM = Asbestos-Containing Material
ACWM = Asbestos-Containing Waste Material
Doc = Document

TABLE 3: PM10 Air Monitoring Concentrations

Run Tag Number	Date	Start Time	End Time	Flow Rate (LPM)	TWA ($\mu g/m^3$)	Action Level ($\mu g/m^3$)[a]
Daily Particulate Monitoring Data						
0	09/28/16	14:48	14:58	2	17.0	***2,500***
1	09/28/16	16:06	16:11	2	32.9	***2,500***
2	09/29/16	8:23	8:39	2	7.4	***2,500***
3	09/29/16	11:15	11:20	2	0.2	***2,500***
4	09/29/16	12:08	12:21	2	35.5	***2,500***
5	09/30/16	9:57	10:06	2	1.7	***2,500***
6	09/30/16	14:08	14:22	2	3.9	***2,500***
7	10/03/16	8:12	9:13	2	30.6	***2,500***
8	10/03/16	11:30	11:53	2	26.6	***2,500***
9	10/04/16	10:40	10:52	2	11.8	***2,500***
10	10/04/16	13:56	14:13	2	10.6	***2,500***
11	10/05/16	9:39	9:54	2	14.8	***2,500***
12	10/05/16	13:13	13:26	2	18.6	***2,500***
13	10/05/16	14:36	14:48	2	12.5	***2,500***
14	10/06/16	11:40	11:47	2	10.6	***2,500***
15	10/06/16	13:10	13:42	2	12.6	***2,500***
16	10/06/16	14:52	14:58	2	11.9	***2,500***
17	10/07/16	8:05	8:23	2	19.6	***2,500***
18	10/12/16	7:56	8:04	2	143.0	***2,500***
19	10/12/16	10:26	10:40	2	13.3	***2,500***
20	10/13/16	12:06	12:13	2	5.5	***2,500***
21	10/13/16	13:52	14:02	2	4.8	***2,500***
22	10/14/16	9:37	9:51	2	10.8	***2,500***
23	10/17/16	12:04	12:12	2	16.9	***2,500***
24	10/17/16	15:09	15:14	2	10.6	***2,500***
25	10/18/16	11:31	11:42	2	30.6	***2,500***
26	10/18/16	14:26	14:38	2	23.6	***2,500***
27	10/19/16	11:14	11:29	2	5.9	***2,500***

Notes:

[a] = The action level 2,500 $\mu g/m^3$ as a 24-hour average concentration

LPM = Liters per minute

TWA = Time-Weighted Average

$\mu g/m^3$ = Micrograms per cubic meter

PM_{10} = Particulate matter 10 micrometers or less in diameter

TABLE 4: Perimeter Air Sampling Results

Sample ID	Date	Location	Type	Pump No.	Time Start	Time Stop	Total (Min)	Pump Flow Rate (LPM)			Total Sample Volume (L)	Fibers	Fiber Concentration (f/cc)
								Initial	Final	Average			
HAR-E1-001-092816	09/28/16	East Side	A	201109004	8:30	13:31	301	2.98	3.13	3.06	919.6	9	0.00480
HAR-W1-002-092816	09/28/16	West Side	A	201109003	8:38	13:42	304	3.01	2.92	2.97	901.4	9	0.00490
HAR-E1-003-093016	09/30/16	East Side	A	201109004	9:46	15:49	363	5.97	4.98	5.48	1987.4	4	<0.00135
HAR-W1-004-093016	09/30/16	West Side	A	201109003	9:20	15:46	386	5.98	5.81	5.90	2275.5	6	0.00129
HI-AA-L01-100316	10/03/16	West Side	A	201109003	7:55	16:05	490	8.00	8.00	8.00	3920.0	7	0.000844
HI-AA-L02-100316	10/03/16	East Side	A	201109004	7:40	16:46	546	8.00	8.01	8.01	4370.7	Occluded	NA
HI-FB-01-100316	10/03/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-100416	10/04/16	West Side	A	201109003	7:41	16:05	504	8.00	8.00	8.00	4032.0	4	<0.000668
HI-AA-L02-100416	10/04/16	East Side	A	201109004	7:45	16:10	505	8.00	8.01	8.01	4042.5	4	<0.000666
HI-FB-01-100416	10/04/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0:00	NA
HI-AA-L01-100516	10/05/16	West Side	A	201109003	7:25	15:30	485	8.00	8.00	8.00	3880.0	6	0.000759
HI-AA-L02-100516	10/05/16	East Side	A	201109004	7:30	15:35	485	8.00	8.01	8.01	3882.4	11	0.00139
HI-FB-01-100516	10/05/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-100616	10/06/16	West Side	A	201109003	7:30	15:40	490	8.13	8.05	8.09	3964.1	4	<0.000679
HI-AA-L02-100616	10/06/16	East Side	A	201109004	7:35	15:50	495	8.03	8.01	8.02	3969.9	11	0.00124
HI-FB-01-100616	10/06/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	1	NA

TABLE 4: Perimeter Air Sampling Results

Sample ID	Date	Location	Type	Pump No.	Time Start	Time Stop	Total (Min)	Pump Flow Rate (LPM)			Total Sample Volume (L)	Fibers	Fiber Concentration (f/cc)
								Initial	Final	Average			
HI-AA-L01-100716	10/07/16	West Side	A	201109003	7:20	13:23	363	8.17	8.05	8.11	2943.9	4	<0.000913
HI-AA-L02-100716	10/07/16	East Side	A	201109004	7:30	15:50	500	8.10	8.01	8.06	4027.5	5	<0.000668
HI-FB-01-100716	10/07/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-101216	10/12/16	West Side	A	201109003	7:35	15:42	487	8.27	8.11	8.19	3988.5	7	0.000860
HI-AA-L02-101216	10/12/16	East Side	A	201109004	7:40	15:50	490	8.29	8.17	8.23	4032.7	6	0.000730
HI-FB-01-101216	10/12/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-101316	10/13/16	West Side	A	201003004	7:15	15:40	505	8.24	8.05	8.15	4113.2	3	<0.000653
HI-AA-L02-101316	10/13/16	East Side	A	201109004	7:20	15:50	510	8.20	8.01	8.11	4133.6	5	<0.000650
HI-FB-01-101316	10/13/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-101416	10/14/16	West Side	A	201003004	7:40	14:06	386	8.25	8.24	8.25	3182.6	4.5	<0.000846
HI-AA-L02-101416	10/14/16	East Side	A	201109004	7:45	14:15	390	8.18	8.5	8.34	3252.6	4	<0.000828
HI-FB-01-101416	10/14/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-101816	10/18/16	West Side	A	201003004	7:25	16:00	515	8.21	7.94	8.08	4158.6	13	0.00153
HI-AA-L02-101816	10/18/16	East Side	A	201109004	7:30	16:05	515	8.26	8.23	8.25	4246.2	8	0.000924
HI-FB-01-101816	10/18/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA
HI-AA-L01-101916	10/19/16	West Side	A	201003004	7:20	15:20	480	8.31	8.20	8.26	3962.4	11	0.00136
HI-AA-L02-101916	10/19/16	East Side	A	201109004	7:25	15:25	480	8.27	8.19	8.23	3950.4	6	0.000744
HI-FB-01-101916	10/19/16	Field Blank	B	NA	NA	NA	NA	NA	NA	NA	NA	0	NA

Notes:

TABLE 4: Perimeter Air Sampling Results

Sample ID	Date	Location	Type	Pump No.	Time Start	Time Stop	Total (Min)	Pump Flow Rate (LPM)			Total Sample Volume (L)	Fibers	Fiber Concentration (f/cc)
								Initial	Final	Average			

A = Area
AA = Area Air
B = Blank
FB = Field Blank
f/cc = Fibers per cubic centimeter
HAR = Harper Industries
HI = Harper Industries
ID = Identification
L = Liters
LPM = Liters per minute
Min = Minutes
NA = Not applicable
No = Number

APPENDIX C

START FIELD NOTES

MADE IN TACOMA
SINCE 1916
Rite in the Rain
DEFYING MOTHER NATURE

Name _____

_____

Address _____

START FIELD LOGBOOK

Logbook Tracking Number CL057

Site Name HARPER Industries

Issue to BRIAN MALONE

Date Issued 9/20/16

TDD # 001/505-001-1609-004

MADE IN USA · RITE GREEN · Archival

RiteintheRain.com

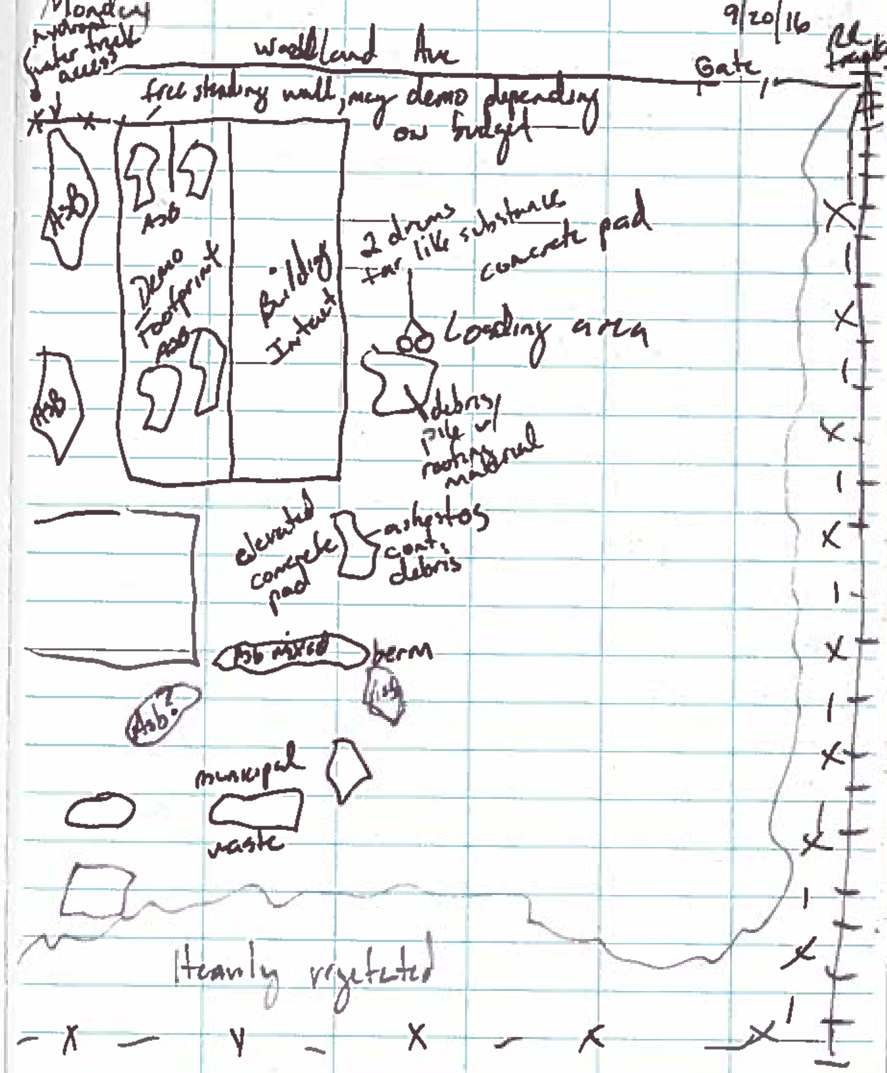
CONTENTS

PAGE	REFERENCE	DATE

Monday Harper Industries Asbestos 9/20/16

0935 START onsite. ER onsite. 10101 Woodland Ave. Walk along front of building. Unrestricted site access to building through windows, site through fence panels. ——— BM
Gate located west of building of Woodland. Will need to get gate operational & gap curb.
0950 EPA onsite. OSC Augustyn, Pohl, Drew. Municipal waste piles on north side.
1010 OSC Augustyn indicates once onsite will do building walk through to assess if any suspect ACM is falling on floor, loose, "low hanging fruit". Focus will be removal of mixed debris piles. EPA has aircons at office.
1015 Active dirt loading operation east of site, directly next door. RR tracks to east, Woodland Ave to south with commercial facilities across Woodland. ——— BM
1030 START to do a radiation survey. 2-aircons, dataram from EPA Westlake.
1100 2-drums on west side of building, looks like roofing tar.
1105 START to get SAP/AMP plan going. ER to begin light mobe Monday @ 12:00. Foreman & 2 laborers to prepare entrance, work on fence & signage.

Monday 9/20/16



4

Monday Harper Industries Asbestos 9/20/16

START at ~~2225~~ 2525 E. 93rd. City has samples of small area of debris. START to conduct 1-day assessment/sampling. City identified floor tile, window glaze, plaster, ~~roofing~~ roofing material. Northwest side of site 9-10 55 gal drums, 2-3 30 gal drums unmarked. Collect 15-20 samples of suspect ACM. TDD expected early October.

1130 START depart site: need to complete SAP, get aircons & DE from EPA & test. Conduct background & rad survey next week.

9/20/16

5

9/26/16 Harper Industries

Cleveland, OH USEPA

weather: 65°, rain, winds W 21 mph, 29.94" Hg, 84% humidity

1145 START Cashmere onsite.

1210 ERRs (ER) onsite. Unloading porta-johns, shower trailer.

1330 Fence contractor onsite. OSC ~~Augustyn~~ Kocher DRC onsite.

1430 Conduct site walk with Ludlum Model 192. 5-6 µR/hr background. 11 µR/hr in 1st floor area. ERRs onsite prepping for job trailers.

1530 ERRs boarding up windows along Woodlawn Ave.

1645 START Cashmere offsite.

DRC

9/27/16 Harper Industries
Cleveland, OH USEPA
Weather: 55°, ↑71°, 54°, clear, winds S 13 mph, 29.88" Hg, 61% humidity.

0700 START Cashmere, ERRs onsite. Conduct H+S safety meeting. Discuss SOW for the day.

0800 OSC Augustyn, Pohl, + Kocher onsite. ERRs clearing brush along fence line.

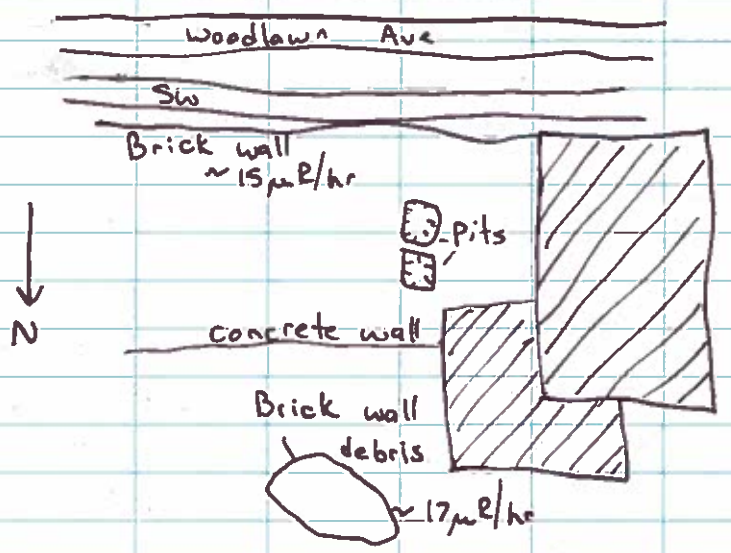
0840 CAT 329F trackhoe onsite. Ongoing clearing + grubbing activities on western side of building near trailer area.

1000 Pac-Van onsite to deliver job trailer.

1100 START Cashmere + OSC Kocher conduct rad survey on debris piles on eastern side of bldg. highest reading ~15 μR/hr on south end near Woodlawn Ave.

1145 Dozer delivered. ERRs consolidating non-haz debris piles + forming stockpiles.

9/27/16 (cont.)



ERRs clearing debris + grubbing truck turnaround area.

1530 START Cashmere + OSCs Kocher + Pohl walk building to inspect for ACM/containers. 9"x9" tile observed throughout upper floors, some pipe wrap on 1st floor level. Plaster unknown.

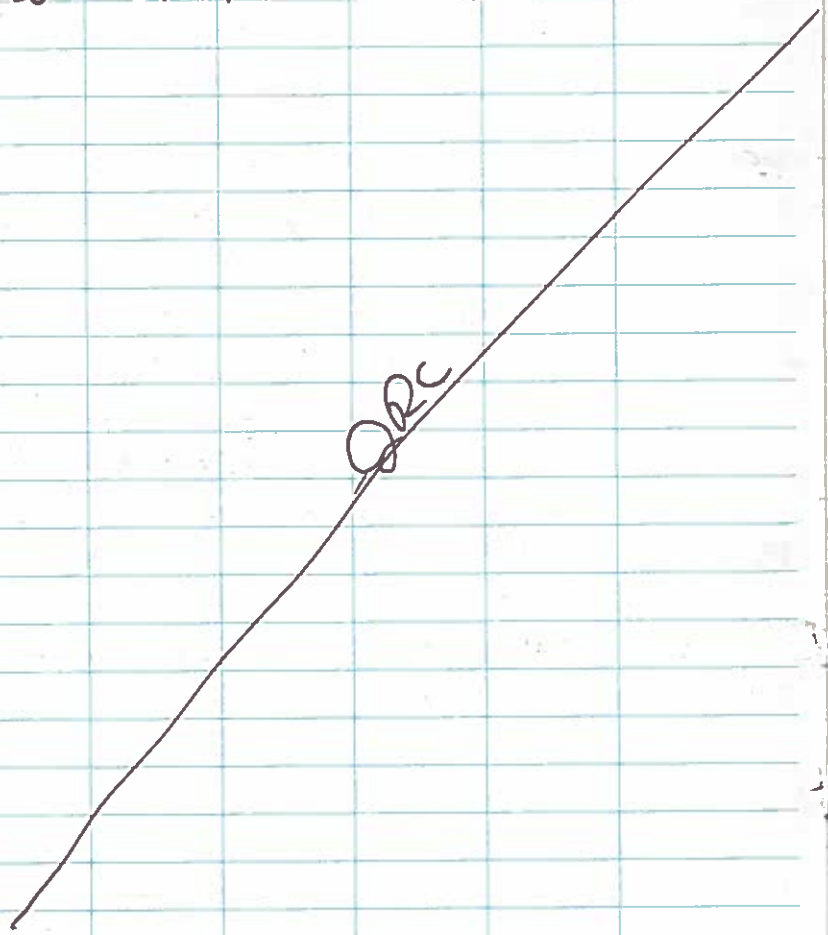
1645 Air cell observed in base-

9/27/16 (cont.)

ment under northern side of the building.

1700 OSCs Kocher, Pohl, + Augustyn offsite.

1730 START Cashmere offsite.



7-28-16 Harper Industries

Cleveland, OH USEPA

Weather: overcast, 60's, wind SE 12 MPH 29.86 in Hg, 57% Humidity

0700 START NEWTON on site. ERRS Conduct H+S meeting. Discuss SOW. START Cashmere on site to transfer equipment + field book + update on site activities + layout.

0800 EPA OSC Kocher + Pohl on site

0810 START set up Air Cons Calibrate flow rate to 3 l/pm with Defender 510 Dry Cal.

0824 START set up Air Con #1 @ east side of building - inside fence along Woodland Ave side. Air Con #2 is set up inside fenceline adjacent to west side of bldg. - along Woodland Ave

ID	LOCATION	start time	start flow	stop time	stop flow
Air Con #1	EAST	0830	2.98	1331	3.13
Air Con #2	West	0835	3.01	1342	2.92

*Backnote: Sample volume very low for above

0916 OSC Kocher + START conduct Rad Survey in basement area +

9-28-16 Harper Industries

misc. areas of site + bldg.

1040 – Conduct particulate monitoring with PDR 1500 at select areas of site (readings avg. 9.6 ug/m³)

1049 ERRS moving piles behind bldg. ERRS spraying down piles with firehose to control emissions

• Fencing crew on site to repair fence in several areas @ perimeter.

1427 START get new batteries for PDR

1440 Conduct monitoring with PDR – @ perimeter + work zones (crew on break) Avg. reading = 10.7 ug/m³

1331 Backlog note: START change new cell batteries for Air Con Unit (from USEPA)

• START utilizing Ludlum Model 19 Radiation Meter for survey.

1510 Background readings avg. between 10.7 to 59 ug/m³ along Woodland Ave. (heavy traffic + dirt hauling operation to east)

1640 OSC Kocher + Pehl off site

1710 ERRS Securing new trailer

1730 START NEWTON offsite

on

9-29-16 Harper Industries

Cleveland, OH USEPA

Weather: Rain 60's, Wind ESE 10 mph

0650 START on site.

0700 Safety Meeting ERRS. Rain expected today. Loading non-haz pile today 10 trucks running with ~4 hour turn around time to landfill + back

0735 First truck on site.

0805 First truck loaded + offsite

0806 OSCs Pehl + Kocher on site

0811 OSC Angustyn on site

0817 Sample collected yesterday with Aircon Units (for PCB) will be sent to lab as soon as ERRS selects a lab (still waiting on final bids)

0824 START + EPA conduct site walk + PDR survey. All particulate levels are low now due to rain earlier. Avg. levels 6-7 ug/m3.

0852 Fencing Co. on site to finish fence repairs @ North + East sides

0958 START + EPA walk bldg. to look @ loose 9x9 tile.

9-29-16 Harper Industries

0945 START conduct PDR survey @ perimeter + work zones - Avg. reading ~ 2-5 mg/m³

1125 START + EPA mobe to check out 2525 E 93rd site adjacent to the N.E. - START to conduct RS.

1200 START conduct PDR survey @ perimeter + work zones Avg readings 0-2 ug/m³

• EIERS only has 3 trucks running today for load out

1225 5 trucks loaded so far today

1230 START Newton offsite for Dr. apt.

1430 START Newton return to site ERRS looking for route to run firehose along east side of bldg and possibly through bldg to reach piles on back side of site.

* No Air Con sampling today * due to rainy conditions.

1530 2 more trucks on site for loading. ERRS is prepping PACM piles on north + east sides of bldg. with excavator + dozer.

9-29-16 Harper Industries

1610 OSC Augustyn found a quarter-size yellow piece of plastic with "Radioactive symbol" on it. START screened the material w/ Ludlum 19 Rad Meter and it registered ~200 uR this material was located in NE corner of site ~ 5' south of fenceline and 20' west of corner EPA placed material in poly sampling container for proper disposal PPE touching material was screened and found to be @ background levels of 5-10 uR/Hr.

1645 OSC Augustyn off site.

1700 OSC Pohl off site.

1710 ERRS prepping loading dock + firehose areas for load-out activities tmrw.

1725 ERRS done for day

1725 START off site

9 truck loads Total

ON

Rite in the Rain.

9-30-16 Harper Industries

Cleveland, OH USEPA

Weather: overcast, rain/storms today 60's, Wind ESE 12 mpH

0650 START on site

0700 ERRS H+S meeting. discuss SOW 10 trucks running today. Fire-hose set up. ACM Pile Prep.

0720 First truck on site for loading.

0738 First truck off site loaded ERRS has selected Quatem <Labs to use for air monitoring> sample analysis.

0817 ERRS loaded 3 trucks of municipal solid waste today so far:

- ERRS using Bobcat + Dozer to prep ACM areas on east side of bldg. and NE side.

0825 Air Cons not set up yet due to light rain + stormy forecast today

0850 4th truck on site

0915 Calibrate Air Cons to attempt sampling due to break in weather

Air Con 1 W1	start flow	start time	stop flow	stop time	volume
	5.98 L/min.	0920	5.81	1546	

9-30-16 Harper Industries

0918 Set up AirCon 1 @ west side of bldg. near fence line / sidewalk

- Calibrate with Defender 510 (only has flow range up to 5.9 L/min.)

0930 ERRS received another excavator on site today

0940 Set up AirCon 2 @ East side of bldg - chained to fence near sidewalk in "cove area" - E1

AirCon E1	start flow	start time	stop flow	stop time	volume
	5.97	0946	4.98	1549	

1005 START conduct PDR survey avg. levels 0.4 — 1.9 ug/m3

1104 ERRS Excavator working in SE corner near the AirCon E1 station Material is very wet from rain, but no firehose suppression is being conducted by ERRS during this activity (This will be sample #04 when results are in).

1305 Dust supression now being utilized in this area

1410 Light drizzle coming down — PDR survey conducted

9-30-16 Harper Industries

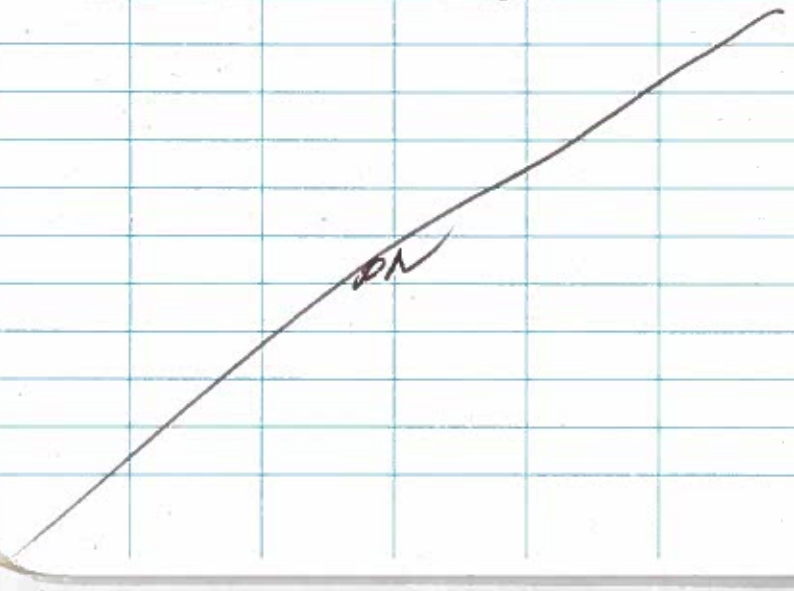
1540 Rain is getting heavier now — START stop the Air con units. Collect sample cassettes and prep for shipment to Quanterra.

1615 ERRS found a few cylinders in piles on east side

1700 ERRS continuing to move ACM piles on east side of bldg. into rows accessible for loading. Rain is keeping dust from piles to minimal airborne levels

1715 wrapping up for day. Prep equipment + site for Monday

1730 START off site



HARPER INDUSTRIES - U.S.E.P.A. 10/3/16

CLEVELAND, OH

WEATHER: 54° CLEAR / WIND: NNW: 4-7 MPH

NUMIDITY: 82%.

0700 - START WILLIAMS ONSITE, ERRS CONDUCTS TAILGATE SAFETY MEETING. SOW. TODAY: CONSOLIDATE MATERIALS & DEBRIS.

0730 - START CALIBRATES & DEPLOYS BOTH ARGON UNITS - BOTH ALONG FENCELINE ON WOODLAND ONE. WESTERN LOCATION IS LOCATION #1 = PUMP # 20110903. EASTERN LOCATION IS LOCATION #2 = PUMP # 20110904. BOTH RUNNING @ 8.0 L/MIN TO TOTAL 3,850 L/DAY NEEDED FOR OSHA TWA: PDR RUNNING @ 2 L/MIN. PERIODIC PERIMETER READINGS WILL BE TAKEN THROUGHOUT THE DAY. MW

0830 - OSC AUGUSTYN, PONL, & ROCKER ONSITE, DISCUSS SOW & WORK COMPLETED.

0900 - START WALKS SITE - INSPECTS INSIDE BUILDING. TSI, PIPE WRAP, PLASTER, CEILING TILES, & TRANSITE ALL FOUND IN BUILDING IN ADDITION TO 9x9" & 12x12" FLOOR TILE (WITH MASTIC MOST LIKELY). WHEN MARKING PAINT ARRIVES, WILL MARK FOR ERRS CLEAN UP. MW

HARPER INDUSTRIES - U.S. EPA 10/3/16
CLEVELAND, OH
WEATHER: 57° CLEAR / WIND NNW 4-7 MPH

1100 - QUANTEM BOBS CALLED OVER CONFUSION ON SAMPLES SHIPPED LAST WEEK - ERRS WASN'T COMPLETED PROCUREMENT. ALL IS WORKED OUT NOW - WILL SEND RESULTS & COC's WILL BE MODIFIED IN FUTURE.

1300 - OSC AUGUSTYN DECIDES TO TAKE S.E. WALL DOWN RUNNING ALONG WOODLAND. WOODLAND WILL NEED TO BE TRAFFIC CONTROLLED, SIDEWALK PROTECTED, & GRASS RE-SEEDED WHEN COMPLETED. AWAITING OSC AUGUSTYN'S ANSWER WHETHER HE WANTS TO SAMPLE CAULKING FOR ASBESTOS. MAY JUST KNOCK WALL DOWN & HAUL AS ACM. ——— MW

1500 - ONE OF THE AIRCON BATTERIES IS BAD - WILL ROTATE OUT OF CIRCULATION.

1730 - ALL PERSONNEL OFFSITE. WILL SEND TODAY'S SAMPLES WITH TOMORROW'S SAMPLES - MAKE SURE QUANTEM IS PROPERLY PROCURED ——— MW

MW 10/3/16

HARPER INDUSTRIES - U.S. E.P.A. 10/4/16
CLEVELAND, OH
WEATHER: 56°F, CLEAR / WIND SE 7-9 MPH
HUMIDITY: 80% - 43%

0715 - START WILLIAMS ONSITE; ERRS HAS CONDUCTED TAILGATE SAFETY MEETING. SAW. TODAY - CONTINUE CONSOLIDATION OF DEBRIS, & WET EVERYTHING DOWN. START WILL MARK ALL ASBESTOS INSIDE BUILDING WITH ASSISTANCE FROM OSC KOEKLER. ——— MW

0741 - AIRCON #1 IS DEPLOYED. ——— MW

0745 - AIRCON #2 IS DEPLOYED. ——— MW

0900 - OSC KOEKLER ARRIVES ONSITE.

0930 - OSC AUGUSTYN ARRIVES ONSITE. MR. MEGNOTTS ARRIVES ONSITE TO GROUND THE GENERATOR. ——— MW

1030 - ERRS DISCOVERED DRUM W/N DEBRIS PILES - OSC AUGUSTYN ORDERED IT CRUSHED IN PLACE. SO IT WAS. ——— MW

1045 - OSC AUGUSTYN HAS DECIDED TO KNOCK DOWN WALL & CLASSIFY AS ACM. CITY DEMOLITION OFFICIAL STOPPED BY & GAVE HIS APPROVAL, BUT CAN NOT HELP W/ LANE CLOSURE - WILL BE LEFT UP TO ERRS. THEY WILL HIRE A SUB TO DO SO.

HARPER INDUSTRIES - U.S.E.P.A. 10/4/16
CLEVELAND, OH
WEATHER: 68° M. CLEAR / WIND: SE 7-9 MPH
HUMIDITY: 89%. - 43%.
1100 - START & OSC KOCHER DRESS OUT IN LEVEL C & ENTER THE BUILDING TO IDENTIFY & MARK ACM THROUGHOUT. START WILL HAVE TO GO WITH EERS WHEN IT COMES TIME TO REMOVE THE ACM. ——— WW
1245 - EERS BEGINS CLEANING / CONSOLIDATING DEBRIS & RUBBLE ON WEST SIDE OF BUILDING WETTING OF DEBRIS ACCOMPANIED ACTIVITIES.
1430 - FRONT LOADER & EXCAVATOR MOVE WEST SIDE PILE TO NE PILE @ NORTH END OF SITE. CONSOLIDATION CONTINUES UNTIL END OF DAY. ——— WW
1730 - ALL PERSONNEL OFFSITE ——— WW

WW 10/4/16

HARPER INDUSTRIES - U.S.E.P.A. 10/5/16
CLEVELAND, OH
WEATHER: 60°F P.C. / WIND SSE 6-15 MPH
HUMIDITY: 81% - 47%
0700 - START WILLIAMS ONSITE; EERS CONDUCTS TAILGATE SAFETY MEETING. SAW: CONTINUE CONSOLIDATION - POSSIBLE ACM CLEANUP INSIDE BUILDING. ——— WW
0725 - START DEPLOY AIRCONS ——— WW
0845 - LINING TRAILER ARRIVES ONSITE.
0900 - OSC PONL ARRIVES ONSITE ——— WW
0910 - FRONT LOADER IS TRANSPORTED OFFSITE.
0925 - PORT-O-JOHNS ARE CLEANED OUT.
0930 - SECOND LINING TRAILER ARRIVES ONSITE ——— WW
1000 - START ACCOMPANYS OSC PONL TO HIS SITE ON E 93RD STREET FOR A QUICK SITE WALK. ——— WW
*BACKNOTE - OSC PONL INFORMED START OF A DRUM NEXT TO THE SITE. UPON INSPECTION START FOUND A 55-GALLON POLY DRUM ~ 100 FT EAST OF THE SITE, IN THE TREE LAWN OF WOODLAND AVE. WRITING ON THE DRUM SAYS "15% SODIUM HYPOCHLORITE". OSC AUGUSTYN HOD EERS BRING IT ONSITE USING A SKID STEER. WILL BE KEPT ONSITE UNTIL →

HARPER INDUSTRIES - U.S. E.P.A. 10/5/16
CLEVELAND, OH
WEATHER: 74° CLEAR / WIND SSE 6-15 MPH
HUMIDITY: 81% - 47%.
. IT CAN BE HAZCAT AND THEN PROPERLY DISPOSED OF. ——————→
1300 - OSC AUGUSTYN & START WALK INSIDE BUILDING ON GROUND FLOOR & "BASEMENT" TO IDENTIFY ACM & DISCUSS CLEANUP. START THEN TAKES OSC PONL ON A TOUR AS WELL.
BACKDATED - MYSTERY DRUM FROM INSIDE BUILDING (RED & WHITE) HAS BEEN RIGHTED & BROUGHT TO THE WESTERN SIDE OF THE BUILDING TO BE STAGED W/ THE BLUE POLY DRUM. LABEL READS: "RA000 - FUEL OIL ADDITIVE" —— WW
1600 - OSC AUGUSTYN DEPARTS SITE —— WW
1645 - OSC PONL DEPARTS SITE —————— WW
1730 - START WILLIAMS OFFSITE —————— WW

WW 10/5/16

HARPER INDUSTRIES - U.S.E.P.A. 10/6/16
CLEVELAND, OH
WEATHER 61° CLEAR / WIND: SSE 11-8 MPH
HUMIDITY 76% -
0700 - START WILLIAMS ONSITE, ERRS CONDUCTS TAILGATE SAFETY MEETING; DISCUSS SOW, WHICH WILL BE MORE CONSOLIDATION, & POSSIBLE ACM CLEANUP OF UPPER FLOORS. —— WW
0730 - START DEPLOYS BOTH AIRCONS — WW
0830 - OSC PONL ARRIVES ONSITE. START ENTERS BUILDING & MARKS EVERY PIECE OF ACM ON THE UPPER FLOORS FOR ERRS TO CLEANUP WHEN THE TIME ARRIVES.
0945 - START FINISHES MARKING ACM.
1000 - OSC AUGUSTYN ARRIVES ONSITE.
1145 - ROLLOFF BOX FOR SCRAP METAL ARRIVES ONSITE, PLACED @ NORTH END OF SITE. —————————— WW
1600 - BOTH AIRCONS HAVE BEEN COLLECTED. WORK ORDER MEETING CONDUCTED —— WW
1650 - OSC AUGUSTYN DEPARTS —————— WW
1710 - OSC PONL DEPARTS —————— WW
1730 - START WILLIAMS DEPARTS — WW

WW 10/6/16

HARPER INDUSTRIES - U.S.E.P.A. 10/7/16
CLEVELAND, OH
WEATHER: 59°F CLEAR / WIND SSW-S 9-12 MPH
NUMIDITY: 76% - 47%

0700 - START WILLIAMS ONSITE; GREG CONDUCTS TAILGATE MEETING & DISCUSS SOW TODAY: LOAD TRUCKS - EXPECTING 8 - AND TRANSPORT DEBRIS OFFSITE TO AMERICAN LANDFILL.

0715 - FIRST TRUCK ARRIVES ONSITE & BEGINS LINING. START DERRICKS AIRCONS — MW

0730 - FIRST TRUCK IS LOADED — MW

0745 - FIRST TRUCK IS WRAPPED AND READY TO DEPARTS. — MW

0750 - GREG HAS OVERPACKED THE TWO WASTE ROOFING TAR DRUMS INTO TWO DRUMS LABELED AS 'SALVAGE DRUM' AND PLACED OUT OF THE WAY NEAR THE BROOK TRAILER. ALSO, THE DRUM LABELED 'FUEL OIL ADDITIVE' WAS STARTED LEAKING IN PLACE — MW

0920 - FIRST ROUND OF TRUCKS HAVE COMPLETED TOTAL OF 7 TRUCKS RUNNING TODAY — MW

1130 - SECOND ROUND OF TRUCKS BEGINS ARRIVING ONSITE — MW

1315 - GREG BAGGED THE TSI PIPE WRAP IN THE FIRST FLOOR OF THE BUILDING, AS WELL AS MOVED THE ALREADY BAGGED TSI TO

HARPER INDUSTRIES - U.S.E.P.A. 10/7/16
CLEVELAND, OH
WEATHER 76° CLOUD / WIND SSW-S 9-12 MPH
NUMIDITY: 76% - 47%

THE OUTSIDE OF THE WESTERN SIDE OF THE BUILDING. — MW

1620 - THIRD "ROUND" OF TRUCKS ARRIVES. JUST ONE TRUCK IS LOADED & DEPARTS. GREG CONTINUED TO CONSOLIDATE SCRAP METAL IN THE ROLL-OFF BOX — MW

1700 - ALL OSE's ARE OFFSITE — MW

1720 - ALL PERSONNEL OFFSITE — MW

BACKNOTE - 15 TRUCKS TOTAL TODAY

MW 10/7/16

Rite in the Rain

HARPER INDUSTRIES - U.S.E.P.A. 10/11/16
CLEVELAND, OH
WEATHER: 48° M.C. / WND: SSE Ø-9 MPH
NUMIDITY: 74%-38%.

1ØØØ - START ONSITE. UNLOADS EQUIPMENT & STRETCHES EXTENSION CHORDS TO ENSURE THEY WILL REACH AIRCONS.

12ØØ - ERRS ONSITE; CONDUCTS TAILGATE SAFETY MEETING. SOW. TODAY: CLEAN FRIABLE ACM ON THE FLOOR IN THE BUILDING ON ALL LEVELS. ——— WW

*BACKNOTE - THE RED & WHITE DRUM LABELED 'FUEL OIL ADDITIVE' WAS BEEN OVERPACKED INTO A 'SALVAGE DRUM'. THIS WAS DONE LAST FRIDAY. BLUE POLY DRUM STILL NEEDS OVERPACK ——— WW

15ØØ - REPRESENTATIVE OF WASTE MANAGEMENT ARRIVES TO DISCUSS LAYOUT & LOADING TOMORROW FOR HIS DRIVERS. DISCUSS W/ RM LETANY ——— WW

151Ø - AFTER DISCUSS W/ OSC AUGUSTYN, START WILLIAMS DEPARTS SITE. ——— WW

WW 10/11/16

HARPER INDUSTRIES - U.S.E.P.A. 10/12/16
CLEVELAND, OH
WEATHER: 51° CLEAR / WND: SSW 11-15 MPH
NUMIDITY: 77%-37%.

Ø7ØØ - START WILLIAMS ONSITE; ERRS CONDUCTS TAILGATE SAFETY MEETING. SOW. TODAY: 16 TRUCKS LINED, LOADED, & WRAPPED.

Ø715 - START CALIBRATES ERRS PERSONNEL PUMPS & DISTRIBUTES TO EXCAVATOR & WRAPPING RACK. ALSO CALIBRATES & DEPLOYS AIRCONS. NEW AIRCON 2Ø1ØØ3ØØ4 FROM PINE REPLACES 2Ø11Ø9Ø3.

*BACKNOTE - ERRS COLLECTED 46 BAGS OF PIPE WRAP - LOOSE - FROM UPPER FLOORS (2ND - ROOF). ALL WAS WETTED, THEN DOUBLE BAGGED. BAGS WILL BE DISTRIBUTED EVENLY INTO LINED TRUCKS WHEN BEING LOADED W/ DEBRIS, THIS WAS APPROVED BY THE LANDFILL. ——— WW

Ø72Ø - FIRST TRUCK IS LINED & LOADED.

Ø745 - FIRST TRUCK DEPARTS ——— WW

113Ø - FIRST TRUCK OF SECOND ROUND OF TRUCKS ARRIVES ONSITE. RUNNING A ROUND OF 11 TRUCKS TODAY. ——— WW

*BACKNOTE - ERRS HAS BEGUN TO CLEAN THE 'PAD' WITH THE SKIDSTEER. ——— WW

HARPER INDUSTRIES - U.S.E.P.A. 10/12/16
CLEVELAND, OH
WEATHER: 70° CLOUDY / WIND: SSW 11-15 MPH
HUMIDITY: 77%-37%
1135 - PORTA-JOHNS GET CLEANED & CHARGED.
1230 : OSC AUGUSTYN DEPARTS FOR HIS OFFICE.
1400 - ERRS RM LETONY FOUND TWO DRUMS UNDER A LOADING DOCK ON THE NE CORNER OF THE SITE. START INVESTIGATED W/ THE LUDLUM METER & FOUND NOTHING ABOVE BACKGROUND ~ 10 μR/HR. ERRS WILL MOVE DRUMS PULLED OUT CRUSHED — MW
1530 - OSC AUGUSTYN BACK ONSITE — MW
1600 - WORK ORDER MEETING — MW
*BOOKNOTE - START COLLECTED ERRS PERSONNEL SAMPLES & PERIMETER AIR SAMPLES.
1700 - BOTH OSCs AUGUSTYN & KOZLER DEPART
1715 - FINAL TRUCK DEPARTS - A TOTAL OF 24 RAN TODAY. — MW
1730 - START WILLIAMS OFFSITE — MW

MW 10/12/16

HARPER INDUSTRIES - U.S.E.P.A. 10/13/16
CLEVELAND, OH
WEATHER: 64° LT RAIN - P.C. / WIND: NNW 20-5 MPH
HUMIDITY:
0700 - START WILLIAMS ONSITE; ERRS CONDUCTS TAILGATE SAFETY MEETING. TRUCK ONSITE ALREADY. START CALIBRATES AIRCONS
0715 - START DEPLOYS AIRCONS. FIRST TRUCK IS LOADED — MW
0745 - FIRST TRUCK DEPARTS SITE — MW
0800 - OSC AUGUSTYN ONSITE — MW
0845 - START DEPARTS FOR OFFICE — MW
1030 - START RETURNS FROM OFFICE — MW
1130 - FORMER OSC JOE FREDLE ONSITE. ALL OSC DEPART FOR LUNCH. — MW
1500 - ERRS RECEIVES DELIVERY OF TRAFFIC CONES & BARRIERS FOR SHUTTING DOWN A LANE NEXT WEEK FOR WALL REMOVAL.
1600 - OSC AUGUSTYN DEPARTS — MW
1700 - OSC KOZLER DEPARTS — MW
1715 - START OFFSITE. A TOTAL OF 23 TRUCKLOADS TODAY. — MW

MW 10/13/16

Rite in the Rain

HARPER INDUSTRIES - U.S. E.P.A. 10/14/16

CLEVELAND, OH

WEATHER: 42° CLEAR / WIND: SSE 0-6 MPH

HUMIDITY 80% - 49%

0700 - START WILLIAMS ONSITE, ERRS CONDUCTS TAILGATE SAFETY MEETING; SOW TODAY: CONTINUE LOADING ACM DEBRIS —— WW

0730 - START CALIBRATES & DEPLOYS AIRGNS. FIRST HAS ALREADY BEEN LINED & LOADED.

0735 - FIRST TRUCK DEPARTS —— WW

0830 - ERRS RECEIVES DELIVERY OF TRUCK LINERS FROM WASTEMANAGEMENT.

0930 - ERRS OPENS BLUE POLY 'MYSTERY' DRUM & SAMPLES IT. DRUM IS FULL TO THE TOP W/ WHAT APPEARS TO BE USED OIL. SAMPLE WENT INTO 1/2 OZ VIAL & INTO THE ANURA PORTABLE NARCAT ID - WHICH COULD NOT READ IT. ERRS WILL EITHER SEND A SAMPLE TO THE LAB OR CHEMTRON, WHERE THEY PLAN TO DISPOSE OF THE DRUM. ERRS ALSO DID THE SAME PROCEDURE FOR THE 'FUEL OIL ADDITIVE' DRUM - NO RESULTS.

1320 - CHEMTRON ARRIVES ONSITE TO TAKE A SAMPLE OF BOTH DRUMS FOR CHARACTERIZATION - 10 DAY TURN TIME —— WW

1430 - ALL PERSONNEL OFFSITE. —— WW

#11 TRUCKS TOTAL TODAY —— WW

HARPER INDUSTRIES U.S.E.P.A. 10/17/16

CLEVELAND, OH

WEATHER: 64° OVERCAST / WIND S 8-13 MPH

HUMIDITY: 61% - 55%

0700 - START ONSITE. WORK TRAILER HAS BEEN BROKEN INTO OVER THE WEEKEND. APPEARS THE ONLY THINGS TAKEN WERE ERRS LAPTOP, BAG, & HARD DRIVE. START EQUIPMENT WAS OPENED & RUMMAGED THROUGH, BUT NOTHING TAKEN. POLICE WERE CALLED.

0715 - ERRS CONDUCTS TAILGATE SAFETY MEETING. SCOPE TODAY: PULL DOWN WALL & CONSOLIDATE MATERIAL; TRAFFIC CONTROL; POSSIBLY CLEAN ACM INSIDE BUILDING.

0800 - ERRS SETS UP TRAFFIC CONTROL ON WOODLAND AVE, CURB LANE —— WW

0845 - ERRS BEGINS PULLING THE WALL DOWN ALONG WOODLAND. ALL GOES WELL, WITH MINIMAL BRICKS FALLING ONTO THE SIDEWALK THAT WERE COVERED W/ PLYWOOD. ONE CRACKED SECTION OCCURED DUE TO BRICKS FALLING. ERRS DISCUSSING WHAT TO DO. OSC ANGUSTYN WOULD LIKE TO GET CONCRETE CAULK & FILL THE GAP/CRACK. —— WW

1400 - ERRS WAS COMPLETED TAKEDOWN OF WALL & CONSOLIDATION OF RUBBLE INTO

HARPER INDUSTRIES - U.S.E.P.A. 10/17/16
CLEVELAND OH
WEATHER: 80° P.C. / WIND: S 8-13 MPH
HUMIDITY 61-55%.
MOIN FILE. CLEANED SIDEWALK, & INSTALLED ORANGE SNOW FENCE. ——— MW
1430 - START WALKED AROUND 1 FLOOR/BASEMT W/ ERRS POINTING OUT MISSED LOOSE ACM PIPE WRAP TO BE BAGGED — MW
1500 - ERRS CONTINUES CONSOLIDATION OF DEBRIS & BAGGING OF ACM ——— MW
1700 - OSC AUGUSTYN DEPARTS SITE — MW
1715 - START DEPARTS SITE ——— MW

MW 10/17/16

HARPER INDUSTRIES - U.S.E.P.A. 10/18/16
CLEVELAND, OH
WEATHER: 70° CLOUDY / WIND S-SW 18-21 MPH
HUMIDITY: 93% - 55%.
0700 - START WILLIAMS ONSITE, ERRS CONDUCTS TAILGATE SAFETY MEETING; SOW TODAY: LOAD TRUCKS & FINISH BAGGING/REMOVING ASBESTOS; TRUCK ALREADY ONSITE & WAITING TO BE LINED.
0800 - FIRST TRUCK IS LOADED & DEPARTS. EXPECTING 8 TRUCKS TODAY. ——— MW
0900 - AMERICAN FENCE COMPANY ARRIVES ONSITE TO INSTALL ALONG SOUTHERN EDGE OF SITE ALONG WOODLAND. ——— MW
1045 - OSC PONL ARRIVES ONSITE — MW
1220 - ERRS TAKES 1 AIR CYLINDER TO LINDE AIR CO. (BOUGHT AIRCO) FOR DISPOSAL SINCE IT CAN BE EVACUATED & CRUSHED.
1430 - START & ERRS RM WALK ERRS CREW W/ OSC AUGUSTYN TO IDENTIFY ACM STILL NEEDING PICKED UP. ——— MW
1645 - OSC PONL & AUGUSTYN DEPART. A TOTAL OF 13 TRUCKS RAN TODAY. — MW
1715 - START OFFSITE ——— MW

MW 10/18/16

Rite in the Rain.

HARPER INDUSTRIES US EPA. 10/19/16
CLEVELAND, OH
WEATHER: 60°F / WIND: E-NE 6-9 mph
HUMIDITY:

0700 - START WILLIAMS ONSITE, OSC PONL ONSITE, EERS CONDUCTS TOOLGATE MEETING; SOW: TODAY MIGHT BE LAST DAY OF LOADING, FINISH ACM BAGGING, BEGIN CLEANUP — WW

0715 - FIRST TRUCK IS LINED & LOADED — WW

0745 - FIRST TRUCK DEPARTS ——— WW

0800 - START WALKED AROUND W/ EERS ONE LAST TIME TO IDENTIFY LOOSE ACM - GATHERED TWO FINAL BAGS, & ADDED THEM TO THE DEBRIS PILE ——— WW

1015 - PORTA-JOHNS ARE CLEANED & CHECKED.

1045 - OSC AUGUSTYN ARRIVES ONSITE — WW

1100 - SCRAP METAL ROLL-OFF BOX DEPARTS FOR AMERICAN STEEL (AM. METAL PROCESS. CO.)

1245 - LAST TRUCK DEPARTS SITE. ALL ACM-DEBRIS IS OFFSITE. EERS CONTINUES TO CLEAN EQUIPMENT, BREAKDOWN MATERIALS, & CLEAN THE SITE. ——— WW

1500 - MOST OF EERS DEPARTS SITE — WW

1545 - OSCs AUGUSTYN & PONL DEPART — WW

1600 - START OFFSITE. EERS IS AWAITING SECURITY. SITE IS CLEANED & FINISHED. ——— WW

WEDNESDAY, OCTOBER 5, 2016

PIC#	TIME	DIR	SUBJECT
1	0855	NW	WRAPPING/LINING TRAILER
2	0909	NE	SITE PHOTO/PROGRESS
3	0911	NE	" "
4	0914	SW	FRONT LOADER BEING DEMOBED
5	1329	SW	MYSTERY DRUM ONSITE
6	1441	S	MYSTERY DRUM & 'FUEL OIL ADDITIVE'
7	1445	SE	SITE PHOTO/PROGRESS
8	1445	SW	" "
9	1446	SW	" "
10	1523	NW	TWO LINING TRAILERS
11	1527	NW	SITE PHOTO/PROGRESS
12	1527	NW	" "
13	1703	S	TWO 'ROOFING TAR' DRUMS
14	1703	↓	DETAIL OF 'ROOFING TAR' DRUM
15	1704	↓	" "

THURSDAY, OCTOBER 6, 2016

PIC#	TIME	DIR	SUBJECT
1	0737	N	AIRGON LOCATION 2
2	1340	NW	SITE PROGRESS - EAST SIDE
3	1359	N	BUILDING NAME
4	1455	SE	SITE PHOTO/PROGRESS
5	1455	SW	SITE " "
6	1455	SE	" " "
7	1456	SW	" " "

PHOTO LOG

MONDAY, OCTOBER 3, 2016

PIC#	TIME	DIR	SUBJECT
1	1036	NW	CONSOLIDATION ON EAST SIDE
2	1037	NW	" "
3	1142	E	FIRE HOSE ON SIDEWALK
4	1332	N	CONSOLIDATION OF EAST SIDE
5	1332	N	" "
6	1337	SE	SITE CONSOLIDATION/PHOTO
7	1339	SW	" "
8	1337	SW	" "
9	1339	SE	SITE PHOTO
10	1340	NE	" "
11	1341	NE	" "
12	1343	NW	" "

TUESDAY, OCTOBER 4, 2016

PIC#	TIME	DIR	SUBJECT
1	1305	SE	WESTERN SIDE BEING SCRAPPED
2	1408	NW	PROGRESS ON EAST SIDE
3	1408	NW	" "
4	1411	E	WESTERN SIDE BEING SCRAPPED
5	1412	SE	SITE PHOTO
6	1413	SW	"
7	1414	SE	"
8	1414	SW	
9	1514	N	PROGRESS ON EAST SIDE

Rite in the Rain

TUESDAY, OCTOBER 11, 2016

PIC#	TIME	DIR	SUBJECT
1	1256	/	INTACT ACM PIPEWRAP
2	1257	/	" "
3	1257	/	" "
4	1259	/	" "
5	1300	/	" "
6	1300	/	" "
7	1300	/	" "
8	1302	/	BAGGED LOOSE ACM PIPE WRAP
9	1302	/	" " "
10	1335	S	'FUEL OIL ADD.' DRUM OVERPACK
11	1336	SW	" " "

WEDNESDAY, OCTOBER 12, 2016

PIC#	TIME	DIR	SUBJECT
1	0804	S	'PAD' BEING CLEARED
2	0804	E	BAGS OF ACM TO BE LOADED
3	0900	N	SITE PHOTO/PROGRESS
4	1318	/	WRAPPED TRUCK W/ SIGNAGE
5	1457	/	FOUND DRUM
6	1457	/	" "
7	1457	NW	SPOT OF FOUND DRUMS
8	1611	SE	SITE PHOTO/PROGRESS
9	1612	SE	" "
10	1612	SW	" "
11	1612	SW	" "
12	1613	NW	" "

FRIDAY, OCTOBER 7, 2016

PIC#	TIME	DIR	SUBJECT
1	0730	SE	FIRST TRUCK BEING LOADED
2	0733	↓	ROOFING TAR DRUM BEING OVERPACK
3	0750	NW	OVERPACKED TAR DRUMS
4	0750	SE	LEAKING 'FUEL OIL ADD' DRUM
5	0807	W	TRUCK BEING LINED
6	0808	NW	TRUCK BEING WRAPPED
7	0818	NE	TRUCK BEING LOADED & WETTED.
8	0841	W	PLACARD ON LOADED TRUCK
9	0937	N	PILE BEING LOADED OUT
10	1446	SW	BAGGED ACM
11	1446	E	BAGGED ACM
12	1447	/	PIPE WRAP - LOOSE
13	1447	/	" "
14	1447	/	" "
15	1448	/	" "
16	1449	/	" "
17	1656	SE	SITE PHOTO/PROGRESS
18	1657	SW	" "
19	1658	NW	" "
20	1659	NW	" "
21	1700	N	" "
22	1701	N	" "

MONDAY, OCTOBER 17, 2016

PIC#	TIME	DIR	SUBJECT
1	0945	N	WALL ABOUT TO BE PULLED DOWN
2	0945	N	WALL BEING PULLED DOWN
3	0950	NE	" "
4	0952	NE	" "
5	1000	N	" "
6	1016	NE	" "
7	1100	NW	DEMOED WALL BEING CONSOLIDATED
8	1101	N	" "
9	1101	N	" "
10	1212	SE	CONSOLIDATION OF WALL DEBRIS
11	1514	E	" "
12	1515	SE	WALL DOWN
13	1515	SE	WALL DOWN
14	1516	SE	SNOW FENCING UP
15	1517	NW	SITE PHOTO W/ WALL DOWN

TUESDAY, OCTOBER 18, 2016

PIC#	TIME	DIR	SUBJECT
1	1636	NW	NEW FENCE
2	1636	NW	NEW FENCE + SITE PHOTO
3	1642	SE	NEW FENCE
4	1642	N	SITE PHOTO
5	1643	NW	" "

THURSDAY, OCTOBER 13, 2016

PIC#	TIME	DIR	SUBJECT
1	1210	SE	SITE PHOTO/PROGRESS
2	1210	SE	" "
3	1210	SW	" "
4	1211	SW	" "
5	1212	NW	" "
6	1213	N	" "
7	1357	SW	WATERING WHILE LOADING
8	1359	NE	WATERING WHILE CLEANING

FRIDAY, OCTOBER 14, 2016

PIC#	TIME	DIR	SUBJECT
1	0756	SE	SITE PHOTO/PROGRESS
2	0757	SW	" "
3	1030	-	SAMPLING POLY DRUM
4	1031	-	" "
5	1032	-	SAMPLE FROM POLY DRUM
6	1108	-	SAMPLES FROM BOTH DRUMS
7	1109	-	" "
8	1204	N	EERS CLEANING/SPRAYING PAD
9	1336	SW	EERS OPENING POLY DRUM

WEDNESDAY, OCTOBER 19, 2016

PIC#	TIME	DIR	SUBJECT
1	0848	NE	FINAL COUPLE OF LOADS
2	0850	NE	FINAL SITE PHOTO
3	1121	SW	FINAL PILE/LOAD
4	1212	NW	FINAL PILE/LOAD
6	1219	N	" "
7	1228	NE	" "
8	1228	NE	" "
9	1345	SE	" "
10	1345	SE	" "
11	1345	SW	" "
12	1346	SW	" "
13	1346	W	" "
14	1347	NW	" "
15	1347	SW	" "
16	1347	S	" "
17	1348	S	" "
18	1349	NE	" "
19	1349	N	" "
20	1349	NW	" "

APPENDIX D

PHOTOGRAPHIC DOCUMENTATION

Photographic Documentation Log

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 1 **Direction:** Northeast **Date:** 10/3/16 **Photographer:** Wes Williams **Description:** The site from the southwest.	

Photograph: 2 **Direction:** Northwest **Date:** 10/3/16 **Photographer:** Wes Williams **Description:** The site from the southeast.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 3 **Direction:** East **Date:** 9/20/16 **Photographer:** Wes Williams **Description:** Debris and municipal waste.	

Photograph: 4 **Direction:** Northeast **Date:** 9/20/16 **Photographer:** Wes Williams **Description:** Debris and municipal waste.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 5 **Direction:** Northwest **Date:** 9/20/16 **Photographer:** Wes Williams **Description:** Debris piles on the eastern side of the building.	

Photograph: 6 **Direction:** Southwest **Date:** 9/20/16 **Photographer:** Wes Williams **Description:** Debris piles on the eastern side of the building.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 7 **Direction:** Northeast **Date:** 9/29/16 **Photographer:** Wes Williams **Description:** Rooftop photo of the debris on the eastern side of the building.	

Photograph: 8 **Direction:** Southeast **Date:** 9/29/16 **Photographer:** Wes Williams **Description:** Rooftop photo of the debris on the eastern side of the building.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 9 **Direction:** Southeast **Date:** 9/20/16 **Photographer:** Wes Williams **Description:** Two drums of tar-like substance found on the western side of the building.	

Photograph: 10 **Direction:** West **Date:** 9/26/16 **Photographer:** Wes Williams **Description:** Drum of "fuel oil additive" found inside the building.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 11 **Direction:** East **Date:** 9/27/16 **Photographer:** Wes Williams **Description:** Debris being consolidated on the northern side of the property.	

Photograph: 12 **Direction:** Northwest **Date:** 9/29/16 **Photographer:** Wes Williams **Description:** Debris being consolidated on the northern side of the building.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 13 **Direction:** Northwest **Date:** 10/3/16 **Photographer:** Wes Williams **Description:** Asbestos-containing material (ACM) debris being consolidated on the eastern side of the building.	

Photograph: 14 **Direction:** Northwest **Date:** 10/4/16 **Photographer:** Wes Williams **Description:** ACM debris being wetted as it is consolidated.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 15 **Direction:** Northwest **Date:** 10/5/16 **Photographer:** Wes Williams **Description:** Truck lining and truck sealing stations.	

Photograph: 16 **Direction:** West **Date:** 10/7/16 **Photographer:** Wes Williams **Description:** Truck being lined with poly liner.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 17 **Direction:** Northwest **Date:** 9/30/16 **Photographer:** Wes Williams **Description:** Truck being loaded with ACM debris.	

Photograph: 18 **Direction:** Southwest **Date:** 10/13/16 **Photographer:** Wes Williams **Description:** ACM debris being wetted as it is loaded into a truck.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 19 **Direction:** Northwest **Date:** 10/7/16 **Photographer:** Wes Williams **Description:** Truck loaded with ACM debris being sealed.	

Photograph: 20 **Direction:** East **Date:** 10/12/16 **Photographer:** Wes Williams **Description:** Sealed and labeled load of ACM debris.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 21 **Direction:** West **Date:** 10/7/16 **Photographer:** Wes Williams **Description:** Placard on a truck before it departs the site.	

Photograph: 22 **Direction:** South **Date:** 10/5/16 **Photographer:** Wes Williams **Description:** The two drums of tar-like substance ready for overpacking.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 23 **Direction:** Northwest **Date:** 10/7/16 **Photographer:** Wes Williams **Description:** The two drums of tar-like substance overpacked and labeled.	

Photograph: 24 **Direction:** South **Date:** 10/11/16 **Photographer:** Wes Williams **Description:** The drum of "fuel oil additive" overpacked, and the drum of waste oil.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 25 **Direction:** Southwest **Date:** 10/14/16 **Photographer:** Wes Williams **Description:** The drum of "fuel oil additive" and the drum of waste oil being opened.	

Photograph: 26 **Direction:** Southwest **Date:** 10/14/16 **Photographer:** Wes Williams **Description:** The drum of waste oil being sampled.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 27 **Direction:** Northeast **Date:** 10/7/16 **Photographer:** Wes Williams **Description:** Example of ACM pipe wrap inside the building.	

Photograph: 28 **Direction:** South **Date:** 10/7/16 **Photographer:** Wes Williams **Description:** Example of ACM pipe wrap inside the building.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 29 **Direction:** West **Date:** 10/11/16 **Photographer:** Wes Williams **Description:** Bagged ACM pipe wrap.	

Photograph: 30 **Direction:** East **Date:** 10/12/16 **Photographer:** Wes Williams **Description:** Bagged ACM pipe wrap to be distributed amongst truck loads.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 31 **Direction:** West **Date:** 10/12/16 **Photographer:** Wes Williams **Description:** Bagged ACM being incorporated into the ACM debris piles.	

Photograph: 32 **Direction:** Southeast **Date:** 9/28/16 **Photographer:** Wes Williams **Description:** Western AirCon2 location (HI-AA-L01).	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

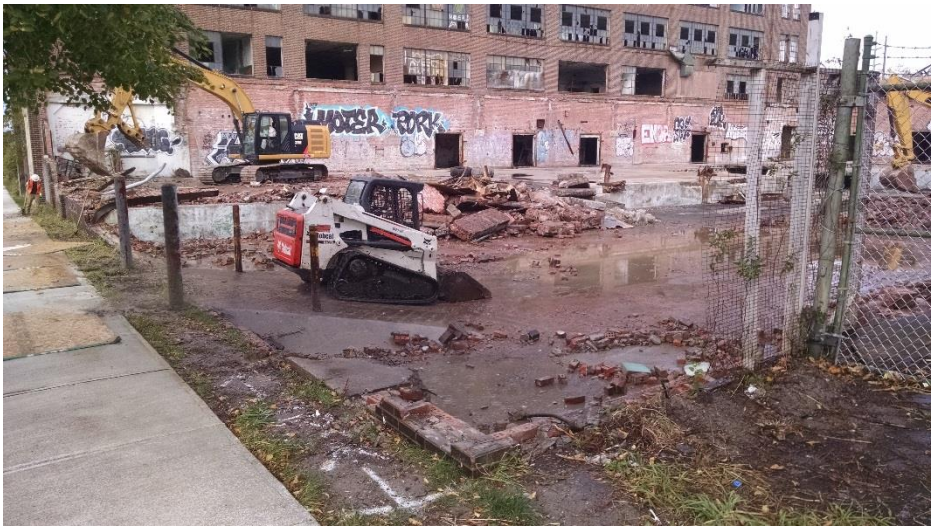
Photograph: 33 **Direction:** North **Date:** 10/6/16 **Photographer:** Wes Williams **Description:** Eastern AirCon2 location (HI-AA-L02).	

Photograph: 34 **Direction:** North **Date:** 10/17/16 **Photographer:** Wes Williams **Description:** Wall along Woodland Avenue being taken down.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 35 **Direction:** Northeast **Date:** 10/17/16 **Photographer:** Wes Williams **Description:** Wall along Woodland Avenue being wetted while taken down.	

Photograph: 36 **Direction:** Northwest **Date:** 10/17/16 **Photographer:** Wes Williams **Description:** Cleanup of demolished wall along Woodland Avenue.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 37 **Direction:** Northwest **Date:** 10/18/16 **Photographer:** Wes Williams **Description:** New permanent fence where wall was taken down along Woodland Avenue.	

Photograph: 38 **Direction:** Northwest **Date:** 10/18/16 **Photographer:** Wes Williams **Description:** The site with the new permanent fence.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 39 **Direction:** Northeast **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** The last of the ACM debris.	

Photograph: 40 **Direction:** Northwest **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** The last of the ACM debris being loaded.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 41 **Direction:** Northeast **Date:** 10/11/16 **Photographer:** Wes Williams **Description:** Example of remaining ACM pipe wrap in the building.	

Photograph: 42 **Direction:** North **Date:** 10/11/16 **Photographer:** Wes Williams **Description:** Example of remaining ACM pipe wrap in the building.	

Client: U.S. Environmental Protection Agency, Region 5 **Prepared By:** Tetra Tech, Inc.
Site Name: Harper Industries Asbestos Site RV **TDD:** S05-0001-1609-004
Location: Cleveland, Cuyahoga County, Ohio

Photograph: 43 **Direction:** Southeast **Date:** 10/11/16 **Photographer:** Wes Williams **Description:** Example of remaining ACM pipe wrap in the building.	

Photograph: 44 **Direction:** Southwest **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 45 **Direction:** Northeast **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

Photograph: 46 **Direction:** North **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 47 **Direction:** Southwest **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

Photograph: 48 **Direction:** Northwest **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

Client: U.S. Environmental Protection Agency, Region 5
Site Name: Harper Industries Asbestos Site RV
Location: Cleveland, Cuyahoga County, Ohio

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1609-004

Photograph: 49 **Direction:** North **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

Photograph: 50 **Direction:** Northeast **Date:** 10/19/16 **Photographer:** Wes Williams **Description:** Removal of ACM debris completed.	

APPENDIX E

LABORATORY ANALYTICAL REPORTS AND DATA VALIDATION REPORT

TETRA TECH

November 10, 2016

Mr. James Augustyn
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 5
25063 Center Ridge Road
Westlake, Ohio 44145

Subject: **Data Validation Report**
Harper Industries Asbestos Site
EPA Contract No. EP-S5-13-01
Technical Direction Document No. S05-0001-1609-004
Document Tracking No. 1189A-G

Dear Mr. Augustyn:

Tetra Tech Inc. (Tetra Tech) is submitting this Data Validation Report for 47 air samples (including 11 field blanks and one lot blank) collected at the Harper Industries Asbestos site. The samples were collected during September and October 2016. The air samples were analyzed for asbestos by phase contrast microscopy by QuanTEM Laboratories. Tetra Tech received the last data package on October 31, 2016.

The data underwent Stage 1 verification and validation in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009).

No rejection or qualification of the data was necessary. The results may be used as reported by the laboratory.

If you have any questions regarding this data validation report, please call me at (509) 688-5957.

Sincerely,

Deb Kutsal
START Chemist

Enclosure
cc: Kevin Scott, Tetra Tech Program Manager
Wes Williams, Tetra Tech Project Manager
TDD File

Tetra Tech, Inc.
1 South Wacker Dr. Suite 3700, Chicago, IL 60606
Tel 312.201.7479 | Fax 312.201.0031
www.tetratech.com

ATTACHMENT 1

DATA VALIDATION REPORT
ASBESTOS SAMPLE RESULTS

DATA VALIDATION CHECKLIST – STAGE 1
EPA REGION 5 START CONTRACT

Site Name	Harper Industries Asbestos Site	**TDD No.**	0001-1609-004
Document Tracking No.	1189A through G		
Data Reviewer (signature and date)	Debbie Kuhl November 8, 2016	**Technical Reviewer (signature and date)**	Jessica A. Vickers November 10, 2016
Laboratory Report Nos.	270539, 270588, 270594, 270682, 270976, 271286, and 271348	**Laboratory**	QuanTEM Laboratories
Analyses	Asbestos by NIOSH Method 7400 (Phase Contrast Microscopy)		
Matrix and Number of Samples	270539 - 13 air samples including 3 field blanks 270588 - 7 air samples including 1 field blank and 1 lot blank 270594 - 4 air samples 270682 – 3 air samples including 1 field blank 270976 – 8 air samples including 2 field blanks 271286 – 9 air samples including 3 field blanks 271348 – 3 air samples including 1 field blank		
Field Duplicate Pairs	None		
Field Blanks	**Field blanks**: FLD Blank, HI-FB-01-100316, HI-FB-01-100416, HI-FB-01-100516, HI-FB-01-100616, HI-FB-01-100716, HI-FB-01-101216, HI-FB-01-101316, HI-FB-01-101416, HI-FB-01-101816, and HI-FB-01-101916 **Lot blank**: Lot Blank		

INTRODUCTION

This checklist summarizes the Stage 1 verification performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009).

OVERALL EVALUATION

No rejection or qualification of the data was necessary. The results may be used as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within Criteria	Exceedance/Notes
NA	No method blank results were provided.

Field blanks:

Within Criteria	Exceedance/Notes
N	Asbestos fibers were found in perimeter field blank samples HI-FB-01-100416 (1 fiber) and HI-FB-01-100616 (1 fiber). Associated sample results were either non-detect or greater than 10 times the associated blank value; therefore, no data were qualified.

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
NA	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	No laboratory duplicate results were provided.

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
NA	

Sample dilutions:

Within Criteria	Exceedance/Notes
NA	None of the samples required dilution.

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for any changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 270539
Date Received: 10/05/16
Received By: Peyton Awbrey
Analyst: Leigh Armstrong
Date of Report: 10/18/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
7007 Engle Rd., Suite E
Middleburg Heights, OH 44130

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, OH
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
001	HI-AA-L01-100316	3920	7	100	8.60	**0.000844**	0.000687	0.000357	0.00193
002	HI-AA-L02-100316	4370.7	Occluded	N/A	N/A	N/A	N/A	N/A	N/A
003	HI-FB-01-100316	Blank	0	100	N/A	N/A	N/A	N/A	N/A
004	HI-AA-L01-100416	4032	4	100	<7.00 U	<0.000668 U	0.000668	N/A	N/A
005	HI-AA-L02-100416	4042.5	4	100	<7.00	<0.000666	0.000666	N/A	N/A
006	HI-FB-01-100416	Blank	1	100	N/A	N/A	N/A	N/A	N/A
007	HI505_2EQ_10416	65.25	5.5	100	<7.00 U	<0.0412 U	0.0412	N/A	N/A
008	HI505_1EQ_10416	61.47	5	100	<7.00	<0.0438	0.0438	N/A	N/A
009	HI505_03EQ_10416	70.37	4	100	<7.00	<0.0382	0.0382	N/A	N/A
010	HI505_01LA_10416	72.09	3	100	<7.00	<0.0373	0.0373	N/A	N/A
011	HI505_01AA_10416	1049.76	57	100	72.3	**0.0265**	0.00256	0.0161	0.0468

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

DJK
11/7/16

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 270539
Date Received: 10/05/16
Received By: Peyton Awbrey
Analyst: Leigh Armstrong
Date of Report: 10/18/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
7007 Engle Rd., Suite E
Middleburg Heights, OH 44130

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, OH
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
012	HI505_02AA_10416	1072.37	7	100	8.60	**0.00309**	0.00251	0.00130	0.00707
013	FLD Blank	Blank	0	100	N/A	**N/A**	N/A	N/A	N/A

Occluded sample. Amount of particulate on sample exceeds NIOSH 7400 Guidelines.

Authorized Signature: Leigh Armstrong

Leigh Armstrong, Analyst

DJL
11/3/16

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 270588
Date Received: 10/06/16
Received By: Peyton Awbrey
Analyst: Leigh Armstrong
Date of Report: 10/7/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
7007 Engle Rd., Suite E
Middleburg Heights, OH 44130

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, OH
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f/cc)	Detection Limits (f/cc)	95% LCL (f/cc)	95% UCL (f/cc)
001	HI-AA-L01-100516	3880	6	100	7.64	0.000759	0.000693	0.000320	0.00176
002	HI-AA-L02-100516	3882.4	11	100	14.0	0.00139	0.000692	0.000690	0.00286
003	HI-FB-01-100516	Blank	0	100	N/A	N/A	N/A	N/A	N/A
004	HI505_04EQ_10516	870.44	7	100	8.92	0.00394	0.00309	0.00175	0.00885
005	HI505_05EQ_10516	886.19	Occluded	N/A	N/A	N/A	N/A	N/A	N/A
006	HI505_01LA_10516	908.04	4	100	≤7.00 U	≤0.00296 U	0.00296	N/A	N/A
007	Lot Blank	Blank	0	100	N/A	N/A	N/A	N/A	N/A

Occluded sample. Amount of particulate on sample exceeds NIOSH 7400 Guidelines.

Authorized Signature: Leigh Armstrong, Analyst

DJZ
11/7/16

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 270594
Date Received: 10/03/16
Received By: Leigh Armstrong
Analyst: Leigh Armstrong
Date of Report: 10/15/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
7007 Engle Rd., Suite E
Middleburg Heights, OH 44130

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, Ohio
Project No.: N/A

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
001	001	919.56	9	100	11.5	**0.00480**	0.00293	0.00228	0.0102
002	002	901.36	9	100	11.5	**0.00490**	0.00298	0.00232	0.0104
003	003	1987.43	4	100	<7.00U	<0.00135U	0.00135	N/A	N/A
004	004	2275.47	6	100	7.64	**0.00129**	0.00118	0.000547	0.00301

Authorized Signature: Leigh Armstrong

Leigh Armstrong, Analyst

DJK
11/7/16

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 270682
Date Received: 10/07/16
Received By: Peyton Awbrey
Analyst: Leigh Armstrong
Date of Report: 10/11/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
1666 Fabick Dr
Fenton, MO 63026

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, OH
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
001	HI-AA-L01-100616	3964.1	4	100	<7.00 U	<0.000679 U	0.000679	N/A	N/A
002	HI-AA-L02-100616	3969.9	11	100	12.7	0.00124	0.000678	0.000552	0.00267
003	HI-FB-01-100616	Blank	1	100	N/A	N/A	N/A	N/A	N/A

Authorized Signature: Leigh Armstrong, Analyst

DJL
11/7/16

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

This report applies only to the standards or procedures indicated and to the specific samples tested. It is not indicative of the qualities of apparently identical or similar products or procedures, nor does it represent an ongoing assurance program unless so noted. These reports are for the exclusive use of the client and are not to be reproduced without specific written permission. QuanTEM is not responsible for user-supplied data used in calculation.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 270976
Date Received: 10/13/16
Received By: Peyton Awbrey
Analyst: Leigh Armstrong
Date of Report: 10/14/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
1666 Fabick Dr
Fenton, MO 63026

Acct. No.: B732

Project: Harper Industries
Location: Cleveland OH.
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
001	HI-AA-L01-100716	2943.9	4	100	<7.00 U	<0.000913 U	0.000913	N/A	N/A
002	HI-AA-L02-100716	4027.5	5	100	<7.00	<0.000668	0.000668	N/A	N/A
003	HI-FB-01-100716	Blank	0	100	N/A	N/A	N/A	N/A	N/A
004	HI-AA-L01-101216	3988.5	7	100	8.92	**0.000860**	0.000674	0.000381	0.00193
005	HI-AA-L02-101216	4032.7	6	100	7.64	**0.000730**	0.000668	0.000309	0.00170
006	HI-FB-01-101216	Blank	0	100	N/A	N/A	N/A	N/A	N/A
007	HI505_06EQ_101216	1033.6	8	100	10.2	**0.00380**	0.00260	0.00175	0.00828
008	HI505_02LA_101216	1004.6	20	100	25.5	**0.00976**	0.00268	0.00540	0.0185

Authorized Signature: Leigh Armstrong

Leigh Armstrong, Analyst

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

DSK 11/7/16

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 271286
Date Received: 10/19/16
Received By: Karen Braley
Analyst: Leigh Armstrong
Date of Report: 10/20/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
1666 Fabick Dr
Fenton, MO 63026

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, OH
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
001	HI-AA-L01-101316	4113.2	3	100	<7.00 U	<0.000653 U	0.000653	N/A	N/A
002	HI-AA-L02-101316	4133.6	5	100	<7.00	<0.000650	0.000650	N/A	N/A
003	HI-FB-01-101316	Blank	0	100	N/A	N/A	N/A	N/A	N/A
004	HI-AA-L01-101416	3182.6	4.5	100	<7.00 U	<0.000846 U	0.000846	N/A	N/A
005	HI-AA-L02-101416	3252.6	4	100	<7.00	<0.000828	0.000828	N/A	N/A
006	HI-FB-01-101416	Blank	0	100	N/A	N/A	N/A	N/A	N/A
007	HI-AA-L01-101816	4158.6	13	100	16.6	0.00153	0.000647	0.000790	0.00307
008	HI-AA-L01-101816	4246.2	8	100	10.2	0.000924	0.000633	0.000426	0.00201
009	HI-FB-01-101816	Blank	0	100	N/A	N/A	N/A	N/A	N/A

DJL
11/7/16

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Phase Contrast Microscopy Analysis Report

QuanTEM Set ID: 271348
Date Received: 10/20/16
Received By: Karen Braley
Analyst: Leigh Armstrong
Date of Report: 10/21/2016
Methodology: NIOSH 7400, Issue 2
AIHA Lab Number: 101352

Client: Environmental Restoration, LLC
1666 Fabick Dr
Fenton, MO 63026

Acct. No.: B732

Project: Harper Industries
Location: Cleveland, OH
Project No.: HI5-05

QuanTEM Sample ID	Client Sample ID	Air Volume (liters)	Fibers	Fields	Fiber Density (f/mm2)	Fiber Concentration (f\cc)	Detection Limits (f\cc)	95% LCL (f\cc)	95% UCL (f\cc)
001	HI-AA-L01-101916	3962.4	11	100	14.0	**0.00136**	0.000679	0.000677	0.00280
002	HI-AA-L02-101916	3950.4	6	100	7.64	**0.000744**	0.000680	0.000314	0.00173
003	HI-FB-01-101916	Blank	0	100	N/A	**N/A**	N/A	N/A	N/A

Authorized Signature: Leigh Armstrong

Leigh Armstrong, Analyst

DJL
11/7/16

Laboratory Sr: 0.56 for 5 to 20 fibers. 0.18 for 20 to 50 fibers. 0.20 for >50 fibers.

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Results have been blank corrected per the NIOSH 7400 method, as applicable.

APPENDIX F

ENVIRONMENTALLY PREFERRED PRACTICES

APPENDIX F

ENVIRONMENTALLY PREFERRED PRACTICES

START implemented environmentally preferred practices to maximize sustainability; reduce energy, water use, and toxic air emissions; promote carbon neutrality; and encourage industrial material reuse and recycling. In accordance with contract requirements, U.S. Environmental Protection Agency (EPA) policies, and relevant guidance, START documented project-specific environmentally preferred practices and available metrics in the Environmental Field Practices Checklist, Environmental Office Practices Checklist, and Green Metrics Table, (ASTM International 2016; EPA 2012a, 2012b, and 2016).

References:

ASTM International (ASTM). 2016. "Standard Guide for Greener Cleanups." E2893-16. April 1.

EPA. 2012a. "Methodology for Understanding and Reducing a Project's Environmental Footprint." Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation. EPA 542-R-12-002. February.

EPA. 2012b. "U.S. EPA Region 5 Superfund Greener Cleanup Implementation Strategy." March 16.

EPA. 2016. Memorandum Regarding Consideration of Greener Cleanup Activities in the Superfund Cleanup Process. From Woolford, James, Director, *et. al*. To Regional Superfund National Program Managers and Regional Counsels, Regions 1 – 10. August 2.

TDD #:	S05-0001-1609-004
Site Name:	Harper Industries Asbestos Site RV
Site City, State:	Cleveland, Ohio
Site Project Manager:	Wes Williams
EPA OSC:	Jim Augustyn

Environmentally Preferred General Field Practices				
If a general category is not applicable, then check N/A for the category box, not for each subcategory.	N= Not Used	N/A= Not Applicable	Y = Yes Implemented	**Comments Section** Justify in the comments for each BMP field as to why the practice was not used, not applicable, or implemented.
Energy				
Use of Energy Efficient Equipment				
Computer Equipment (FEMP/Energy Star)			X	
Installation of Electric Service	X			Generator was used as the power source
Reduce Carbon Emissions from Transportation				
Use Internet Based Meetings/Conferences			X	
Maximize Carpooling		X		Only one START personnel on site, so there was no way to carpool
Use of Local Labor/Suppliers/Waste Disposal Facilities (50 mile radius)			X	
No idling, except for extreme weather conditions			X	
Use of Alternative Fuels, if available within 10 miles		X		Did not have alternative fuel equipment or vehicles
Properly Inflated Tires			X	
Email Small Files (less than 8MB)			X	
Reusable Electronic Storage Media or the Cloud			X	
Water				
Use of Low Flow Sampling Pumps		X		Did not sample water
Waste				
Use of Local Recycling Programs			X	Utilized office recycling program for paper and plastic
Use of Rechargeable Batteries			X	AirCon2 use rechargeable batteries
Recycling – Other		X		Nothing else to recycle
Plastic Reduction			X	Utilized recycling program
Reuse of Resources			X	Reused maps and documents
Direct Push Boring		X		Did not conduct an investigation
Materials				
Printing when Required				
Double-sided Printing			X	Office printer is double-sided

TDD #:	S05-0001-1609-004
Site Name:	Harper Industries Asbestos Site RV
Site City, State:	Cleveland, Ohio
Site Project Manager:	Wes Williams
EPA OSC:	Jim Augustyn

Environmentally Preferred General Office Practices				
If a general category is not applicable, then check N/A for the category box, not for each subcategory.	N= Not Used	N/A= Not Applicable	Y = Yes Implemented	**Comments Section** Justify in the comments for each BMP field as to why the practice was not used, not applicable, or implemented.
Energy				
Use of Energy Efficient Equipment				
Programmable Thermostats			X	The on-site trailer provided a programmable thermostat
CFL or LED lights on Equipment		X		Did not use equipment with lights
Heating, Cooling, & Fans (FEMP/Energy Star)		X		U.S. Environmental Protection Agency (EPA) Emergency and Rapid Response Services (ERRS) contractor responsible for office equipment.
Computer Equipment (FEMP/Energy Star)			X	Laptop is Energy Star
Reduce Carbon Emissions from Transportation				
Use Internet Based Meetings/Conferences			X	
Maximize Carpooling/Public Transportation		X		Only one START personnel on site, so there was no way to carpool
Use of Local Labor/Suppliers (50 mile radius)	X			Field Environmental Instruments (FEI) is not within 50 miles of the site
Email Small Files (less than 8 MB)			X	
Reusable Electronic Storage Media or the Cloud			X	
Water				
Use of Eco Friendly Toilets and Faucets		X		EPA ERRS contractor responsible for providing portable toilets used on site.
Waste				
Reusable/Recyclable Packaging			X	Reused boxes sent for shipping purposes
Minimize Packaging Material			X	
Recycle CFL and LED lights		X		EPA ERRS contractor responsible for supplies.
Use of Local Recycling Programs			X	Utilized office recycling program
Use of Rechargeable Batteries			X	AirCon2 used rechargeable batteries
Materials				
Printing when Required				
Double-sided Printing			X	Office printer is double sided
100% post-consumer recycled paper	X			Our paper is not post-consumer
Use of Bio-Based Materials				

Environmentally Preferred General Office Practices				
If a general category is not applicable, then check N/A for the category box, not for each subcategory.	N= Not Used	N/A= Not Applicable	Y = Yes Implemented	**Comments Section** Justify in the comments for each BMP field as to why the practice was not used, not applicable, or implemented.
Bio-Based Ink	X			Our ink is not bio-based, but will consider the use of it in the future
Bio-Degradable Cleaning Products		X		Did not use cleaning products
Environmentally Preferred				
Green Procurement				
Environmentally Preferred Vendors		X		Field Environmental Instruments (FEI) and Environmental Analysis & Management (EA Group) are not rated "green"
Purchase Supplies in Bulk		X		Did not purchase a large quantity of supplies
Liquids in Concentrated Form		X		Did not have liquids

Environmentally Preferred General Field Practices				
If a general category is not applicable, then check N/A for the category box, not for each subcategory.	N= Not Used	N/A= Not Applicable	Y = Yes Implemented	**Comments Section** Justify in the comments for each BMP field as to why the practice was not used, not applicable, or implemented.
100% post-consumer recycled paper	X			Did not have post-consumer recycled paper available to use
Land & Ecosystems				
Minimize Disruption to Natural Vegetation			X	
Use of Non-invasive Investigation Techniques		X		Did not conduct an investigation
Environmentally Preferred				
Green Procurement				
Environmentally Preferred Vendors	X			Field Environmental Instruments (FEI) is not rated “green”
Green Lodging/Hotels		X		Did not stay in hotels
Use of Green Laboratories	X			Environmental Analysis & Management (EA Group) is not rated “green”

TDD #: S05-0001-1609-004

Site Name: Harper Industries Asbestos Site RV

Site City, State: Cleveland, Ohio

Site Project Manager: Wes Williams

EPA OSC: Jim Augustyn

Green Metrics		
Metric	**Amount**	**Unit of Measure**
Diesel Fuel Used		gallons
Distance Traveled[1]	312.00	Miles
Unleaded Fuel Used[2]	12.63	gallons
Alternative/E-85 Fuel Used		gallons
Electricity from Coal		kW
Electricity from Natural Gas		kW
Electricity from solar/wind		kW
Electricity from grid/mix		kW
Solid waste reused		lbs
Solid waste recycled		lbs
Water Used		gallons

Greenhouse Gas Emissions (Site Specific)					
Source	**Amount Used**	**Unit of Measure**	**Methane (CH4) (Grams)[3]**	**Nitrous Oxide (N_2O) (Grams)[3]**	**Carbon Dioxide (CO2) (Kilograms)[3]**
Gasoline	12.63	X gallons	2.06	5.09	112.55
Diesel		X gallons			
E-85		X gallons			
Electricity Office		X Kilowatts			
Natural Gas		X Therms			
Solid Waste		X lbs			
Other		X Unit of Measure			

Note:

[1] Distance traveled based on number of trips between the Harper Industries site at the Cleveland, OH location, and the project manager's home in Cleveland, OH (13 miles) in a light duty truck vehicle, which was required for cargo space. A total of 12 trips to and from the site were made by 1 Tetra Tech personnel totaling 312 miles.

[2] Fuel consumption based on distance traveled in a large sport utility vehicle. An average fuel efficiency of 24.7 miles per gallon was assumed based on 2011 light duty truck fuel efficiency from "Average Fuel Efficiency of U.S. Light Duty Vehicles," U.S. Department of Transportation, Bureau of Statistics Table 4-23 (Accessed online at http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_04_23.html on December 9, 2016).

[3] Methane and nitrous oxide emissions based on emission factors of 0.0066 and 0.0163 grams per mile for EPA Tier 2 light duty gasoline trucks from "Voluntary Reporting of Greenhouse Gases Program, Fuel Emission Coefficients, Table 5" (Accessed online at http://205.254.135.7/oiaf/1605/coefficients.html on December 9, 2016)

[4] Carbon dioxide emissions based on emission factors of 8.91 kilograms carbon dioxide per gallon of gasoline and 10.15 kilograms carbon dioxide per gallon of diesel fuel from "Voluntary Reporting of Greenhouse Gases Program, Fuel Emission Coefficients, Table 2" (Accessed online at http://205.254.135.7/oiaf/1605/coefficients.html on November 14, 2016).